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Nearly 9,000 participants from 125 countries, including 103 ministers, attended WIREC.

PREFACE

Energy security and climate change are two of the greatest challenges of our time. Increased access to modern, clean, affordable, and efficient energy sources – especially renewable energy – will be essential to alleviating poverty and growing our economies while at the same time ensuring that we pass on a healthy planet to future generations.

The world has tapped just a small portion of the vast supply of renewable energy resources such as solar, wind, geothermal, biomass, hydro, and wave. We must rededicate ourselves to harnessing these resources in ways that are technically feasible, financially viable and socially acceptable. Meeting this challenge will require collaborative efforts with public and private partners across the globe.

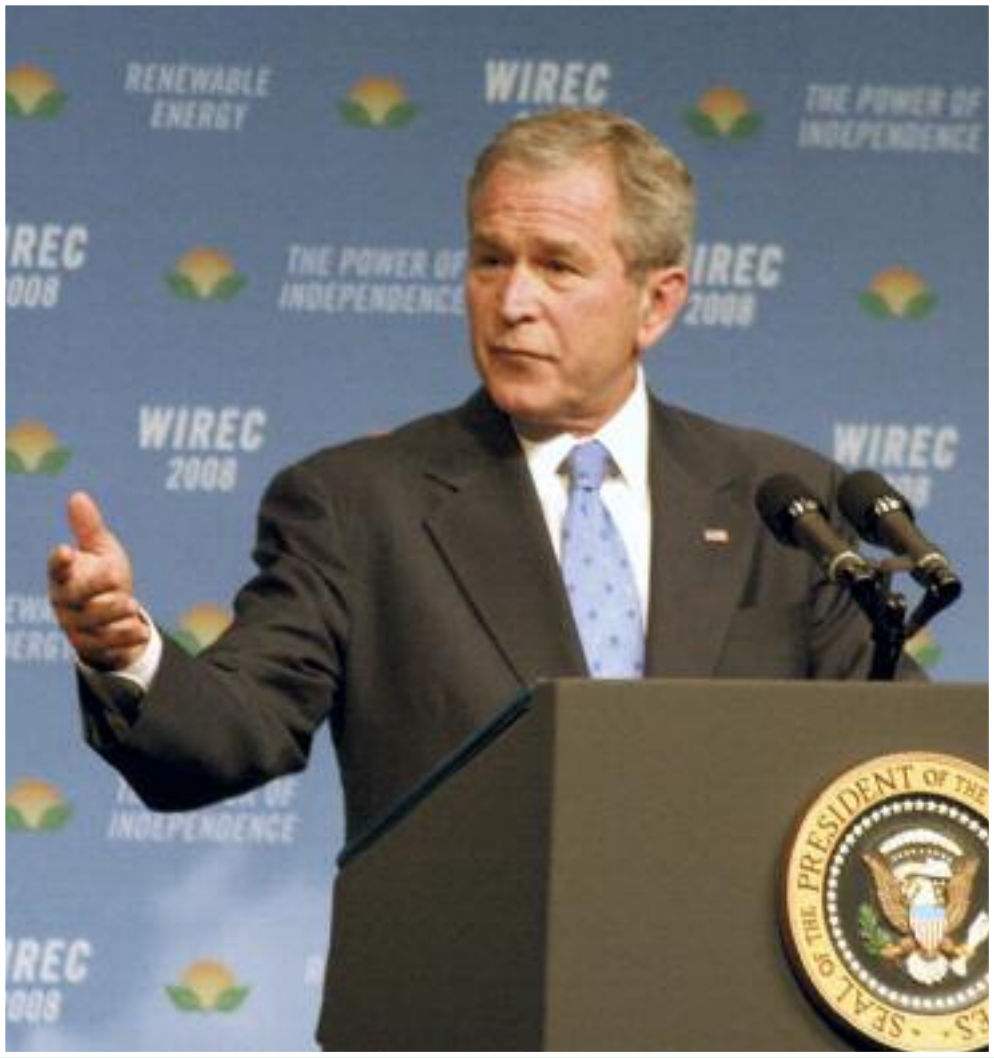
In this spirit, the United States organized the Washington International Renewable Energy Conference (WIREC) from March 4-6, 2008, in Washington, D.C. WIREC was a collective effort, involving public and private partners, both domestic and international. Building on Bonn Renewables 2004 and the 2005 Beijing International Renewable Energy Conference, WIREC brought together the world's leaders in the field of renewable energy from governments, international organizations, non-governmental organizations, and the private sector. We were honored by the participation of nearly 9,000 people from 125 countries, including 103 ministers. WIREC featured more than 70 official side events and a world-class trade show featuring exhibits from 246 organizations, and concluded with more than 140 concrete pledges from governments, international organizations and the private sector to advance the uptake of renewable energy.

WIREC marked the convergence of momentous challenge and tremendous opportunity. During the three days of the Conference, we focused on cross-cutting policy issues: research and development; market adoption and finance; agriculture, forestry and rural development; and involvement of sub-national authorities.

We are seeing a remarkable expansion in investment and deployment of a wide range of renewable energy resources – and the future for these technologies looks even brighter.

We look forward to working together to make renewable energy a growing reality in the years to come. The United States is grateful to all who made WIREC a success, and we welcome India's offer to host the next International Renewable Energy Conference in 2010.

Dr. Paula J. Dobriansky
Under Secretary for Democracy and
Global Affairs
U.S. Department of State



U.S. President George W. Bush addressed delegates.

"I hope you understand that you're pioneers on the frontiers of change; that I fully suspect that this conference will seem unbelievably outdated within a decade; that people will marvel about how far technology has helped change our habits and change the world. And I hope you take great pride in being a part of this constructive change. And so thanks for coming to America. We welcome you here."

- George W. Bush, President of the United States

INTRODUCTION

Overview of WIREC

The Washington International Renewable Energy Conference (WIREC) convened March 4-6, 2008, at the Washington, D.C. Convention Center. The U.S. Government organized the conference in collaboration with the American Council On Renewable Energy (ACORE). WIREC consisted of four components: a ministerial-level meeting complemented by a co-located but separately organized business conference, a trade show exhibition, and official side events. At the ministerial-level conference, participants from government, civil society, non-profit organizations, academia, and private sector discussed the benefits and costs of a major and rapid scale-up in the global deployment of renewable energy technology. The ministerial conference integrated economic, social, security, and environmental dimensions of renewable energy and addressed a wide range of issues. More than 3,000 participants from 125 countries attended the Ministerial Meeting, including 103 ministers. Nearly 6,000 individuals took part in the parallel events for a grand total of some 9,000 participants, making WIREC the largest conference on renewable energy held to date.

U.S. President George W. Bush addressed the WIREC Ministerial Meeting, as did the Secretaries of Agriculture, Energy, and Interior, and the Administrator of the Environmental Protection Agency. We were fortunate that more than 125 speakers, representing major stakeholders from around the world, shared their visions and experiences, and, in many cases, engaged in discussions with other participants. WIREC participants attended 29 plenary and concurrent sessions to discuss four cross-cutting policy themes: research and development (R&D); market adoption and finance; agriculture, forestry and rural development; and role of national and sub-national authorities.

Leading up to the conference, the Renewable Energy and Energy Efficiency Partnership (REEEP) conducted regional consultation meetings for WIREC in Pretoria, South Africa; Sydney, Australia; New Delhi, India; Singapore; and across Latin America. The outcomes from these meetings were compiled into a report that was presented by the South African Minister for Minerals and Energy, Buyelwa Sonjica, at WIREC.

WIREC participants have submitted over 140 voluntary pledges for inclusion in the Washington International Action Program (WIAP), a compilation of domestic and international pledges to accelerate the global uptake of renewable energy. The Renewable Energy Policy Network for the 21st Century (REN21) supported WIREC and has agreed to monitor and review the implementation of the pledges. The National Renewable Energy Laboratory (NREL) in Golden, Colorado, is conducting an impact analysis of the WIAP.

REEGLE, the information gateway for renewable energy and energy efficiency helped WIREC to disseminate best practices and solutions critical to the deployment and scale-up of renewable technologies for each of WIREC's four policy themes.

India will host the next International Renewable Energy Conference in early 2010.

This report provides a summary of the proceedings at the Ministerial Meeting events accompanied by brief descriptions of the parallel events. The full presentations of many of the speakers can be found at the WIREC website www.WIREC2008.gov.

Road to WIREC

The Washington International Renewable Energy Conference represented the dramatic evolution and strengthening of the international community's role in advancing renewable energy over the past three decades. During the fuel crisis of the 1970s many countries began exploring alternative sources of energy. The international community's first major attempt to develop a strategy for the use of alternative fuels was the 1981 UN General Assembly Resolution A/RES/36/193 on the outcomes of the UN Conference on New and Renewable Sources of Energy, which included a "Nairobi Programme of Action for the Development and Utilization of New and Renewable Sources of Energy." However, it was only following the 1992 UN Conference on Environment and Development (UNCED), in Rio de Janeiro, Brazil, that renewable energy issues featured more prominently on the international environment and development agenda. Delegates at UNCED adopted an action plan for implementing sustainable development that addresses sustainable energy and protection of the atmosphere by controlling atmospheric emissions of greenhouse gases and other substances.

In the years following the Rio Earth Summit, several UN conferences and summits touched on renewable energy issues in their outcome documents. The 2001 session of the UN Commission on Sustainable Development, for example, adopted a decision on "Energy for Sustainable Development," highlighting the importance of renewable energy, and a number of opportunities for expanding the utilization and dissemination of renewable energy technologies worldwide.

The 2002 World Summit on Sustainable Development (WSSD) in Johannesburg represented a significant milestone in the international community's discussions on renewable energy. In Johannesburg, participants agreed to: "With a sense of urgency, substantially increase the global share of renewable energy sources, with the objective of increasing its contribution to total energy supply, recognizing the role of national and voluntary regional targets as well as initiatives, where they exist, and ensuring that energy policies are supportive of developing countries' efforts to eradicate poverty, and regularly evaluate available data to review progress to this end."

The Johannesburg Summit was also the first UN summit to include voluntary, multi-stakeholder partnerships as an official outcome. Several renewable energy-related partnerships were launched in Johannesburg, including the Renewable Energy and Energy Efficiency Partnership (REEEP), the Global Village Energy Partnership (GVEP), the Global

Network on Energy for Sustainable Development (GNESD), the Mediterranean Renewable Energy Program (MEDREP), and the Energy and Environment Partnership for Central America. Several additional renewable energy partnerships have been launched since Johannesburg, including Renewable Energy Policy Network for the 21st Century (REN21) and the Global Bioenergy Partnership (GBEP). Taken together, these networks and initiatives are playing a valuable role in catalyzing the deployment of renewable energy across the globe.

In order to further advance the renewable energy objectives agreed to at the WSSD, German Chancellor Gerhard Schröder invited the international community to Germany for an International Conference on Renewable Energy which took place in June 2004 in Bonn, Germany. Participants at Bonn Renewables 2004 addressed issues including: best-practice examples and success stories; policies for renewable energy market development; financing options; strengthening capacities, research and policy development, and institutions; energy services and the Millennium Development Goals (MDGs); and the contribution of renewable energy in meeting the climate challenge. In the closing session, delegates adopted three outcomes: policy recommendations, an international action programme and a political declaration. The Declaration called for the establishment of a global policy network, which led to the creation of the REN21.

The Chinese Government hosted the Beijing International Renewable Energy Conference (BIREC) in November 2005. The participants addressed practical measures, success stories, and effective legislative and policy measures. Officials adopted a Beijing Declaration, which recognized the need for significant financial resources, both public and private, for investment in renewable energy and energy efficiency, and emphasized the need for enhanced international cooperation for capacity building in developing countries, among other issues.

From 2005-2007, the UN Commission on Sustainable Development, charged with ensuring effective follow-up of the WSSD, focused on energy-related issues. Over the course of the two years, CSD participants developed an internet-based matrix of case studies and lessons learned for increasing access to modern energy services. In addition, CSD participants announced a number of new and strengthened actions on energy for sustainable development, including renewable energy.

In May 2007, the U.S. Secretary of State, Dr. Condoleezza Rice, announced plans to host WIREC in March 2008. From the beginning, WIREC was designed to build on the successes of Bonn Renewables 2004 and BIREC 2005. The overarching goals of the WIREC were to bring all the stakeholders with interest in scaling up of renewable energy worldwide together to discuss the various issues, challenges, and available and emerging solutions in renewable energy, to motivate them to make concrete pledges to promote the rapid global uptake of renewable energy and to provide a wide array of networking opportunities to the leaders of the renewable energy community.

Pre-WIREC Regional Consultations

The U.S. State Department asked the Renewable Energy and Energy Efficiency Partnership (REEEP) to carry out regional meetings in Asia, Latin American and the Caribbean, and Southern Africa, in order to provide regional perspectives and expectations for the WIREC Ministerial Meeting. REEEP's International Secretariat worked with its secretariats in the three regions to design a regional consultation strategy, which involved a questionnaire for policy makers in Latin America and workshops in Melbourne, New Delhi, Pretoria, and Singapore.

> "Renewable energy once was a niche market. That's no longer the case. Just ask the bankers and investment fund managers joining us for WIREC. They are pursuing investment opportunities for renewable energy in every corner of the world."
>
> **- John Negroponte,**
> **Deputy Secretary,**
> **U.S. Department of State**

Following consultations with high-level stakeholders in Asia, Latin America and the Caribbean, and Southern Africa, the REEEP secretariat drafted a report to identify the main barriers to the uptake of an important form of clean-technology renewable energy; and offer solutions on how to overcome these barriers. The highlights of these consultations were presented at WIREC by the Minister of Minerals and Energy of South Africa.

A common theme that emerged from these consultations is the need for global leadership to ensure that the potential of renewable technologies is realised. Furthermore, the report found that affordable technological solutions already exist, and could provide solutions to improve both social and economic development, and thus would help countries balance their energy demand with their energy supply in a diverse, stable, secure and sustainable manner.

Unfortunately, many barriers to the deployment of renewable technologies still remain. The main barriers that the regional consultations identified were:

- Many national and regional energy plans lack long-term reliable policies, and regulatory measures to encourage the deployment of renewable energy technologies. Moreover, this policy void is compounded by the fact that some governments do not have the ability to enforce these legal structures or overall accountability within these plans.
- There is a lack of suitable finance and business models to provide attractive long-term investment environments for renewable energy.
- Investors often lack knowledge about renewable energy projects and their rates of return. In addition, project developers frequently lack planning and business model skills. Both these problems result in a scarcity of capital, especially in the early stages of project development.
- Renewable projects often play on an uneven playing field with conventional energy projects due to subsidies applied to energy produced from fossil fuels.

Stakeholders from the three consulted regions suggested a series of actions that could be undertaken by various stakeholders to address these barriers including:

- **Governments at all levels** — Develop and implement well-formulated long-term policies and favourable regulatory frameworks, coupled with appropriate incentives, which would work to remove uncertainty in the market and look to attract increased investment in renewable energy technologies.
- **Governments at all levels, and interested stakeholders** — Work together and collaborate with international and regional organizations who encourage clean energy regimes and increase skills and knowledge among local and national decision and policy makers.
- **Governments** — Provide financial incentives, encourage the enlargement of carbon markets to provide further support and promote renewable projects, which can act as catalysts in attracting funding from private sector sources.
- **Governments** — Eliminate any existing market distortions between renewables and fossil fuel energy production.
- **Governments, financial institutions, and development organizations** — Encourage research and development by providing clear policy initiatives; research and development grants; "seed" funding; and the use of public/private partnerships to support start-up businesses.
- **Governments at all levels, and interested stakeholders** — Provide expertise, education and financial opportunities to further technological advancements and deployment.
- **Interested International and Regional Organizations** — Educate financial institutions and investors to gain a better understanding of renewable projects and their rates of return.
- **International and Regional Organizations and Financial Institutions** — Train renewable energy project developers so that they can develop good business models and have a better understanding of projects that will attract both public and private investment.
- **Project developers** — Share knowledge and develop best practices with other stakeholders working in the renewables field.
- **Collaboration between all the stakeholders** in the regions is the key to surmounting the barriers to renewable energy development. There is increasing political will within the regions to embrace a clean energy regime – technology is improving and reducing in cost, levels of expertise are expanding, and investment capital is available. The most beneficial way to take advantage of these resources is through collaboration and knowledge sharing aimed at the adoption of global best practices.

John Negroponte, Deputy Secretary of State, U.S. Department of State, underscored the challenges of energy supply, environment and economic growth.

Nobuo Tanaka, Executive Director, International Energy Agency, said energy security and climate change must be addressed together.

Buyelwa Sonjica, Minister, Ministry of Minerals and Energy, South Africa, presented the findings of several consultations that REEEP organized in preparation for WIREC 2008

Parliamentary State Secretary Michael Müller, German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, proposed an “ecological Bretton Woods” to address the challenges of the upcoming century.

PLENARY SESSIONS

Setting the stage and defining the issues

The speakers at the plenary sessions set the stage by reviewing global progress in renewable energy adoption since Bonn 2004 and BIREC 2005 and defined issues and challenges that need to be addressed for a rapid scale-up of renewable energy. These issues ranged from research and development of materials and technology, to market deployment and financing, to rural and economic development, to education and training. They recognized that these difficult challenges require a concerted effort not only by visionary scientists and engineers in academia, industries, and laboratories but also by all other major stakeholders. Policy makers at all levels of government, and leaders in finance, business, and civil society should work together to accelerate deployment of these technologies.

Paula Dobriansky, Under Secretary of State, opened the conference by welcoming the delegates to WIREC. She underscored the importance of renewable energy by pointing out that approximately two billion people lack access to modern energy services that are essential for development; and many of those that do have access still face significant challenges from air pollution, energy security, and the rising cost of fossil fuels. She remarked that "Renewable energy is a vital piece to solving this global challenge."

Michael Eckhart, President, ACORE, highlighted that renewable energy is a policy-driven market; that technologies are available, affordable and spreading; and that major R&D is needed to increase the scale and reduce the costs of third and fourth generation technologies.

Thomas Dorr, Under Secretary for Rural Development, U.S. Department of Agriculture (USDA), said the U.S. has gone from producing two million to 450 million gallons of biodiesel in the last seven years, and many new technologies, in such areas as genomics, offer great promise.

U.S. Deputy Secretary of State John Negroponte emphasized that renewable energy can reduce dependency on fossil fuels and lower greenhouse gas emissions. He highlighted climate change discussions among the major economies and the development of a clean energy fund.

U.S. Secretary of Agriculture Ed Schafer underscored agriculture as a main contributor to renewable energy production, and that renewables have boosted the farm economy. He further noted the potential benefits of opening agriculture markets for developing countries and challenges such as the need for viability without subsidies, environmentally safe production, social acceptance, and balancing energy and food production needs.

Parliamentary State Secretary Michael Müller of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, emphasized that protection of natural capital can stabilize the global economy, create jobs and improve quality of life, and he proposed an "ecological Bretton Woods" emerging from the G8 to address the ecological challenges of the upcoming century.

Zhang Xiaoqiang, Vice Chairman of China's National Development and Reform Commission, reviewed the experience of Beijing International Renewable Energy Conference (BIREC), and highlighted the need for greater international support for renewable energy in developing countries, new mechanisms for technology research, development and dissemination, capacity building, and a global approach to establishing product standards, which are currently dominated by a few large countries.

MINISTERIAL LEVEL PLENARY SESSION: DEFINING THE ISSUES

Six speakers made presentations on current trends and issues relating to the transition to renewable energy. Hermann Scheer, General Chairman of the World Council for Renewable Energy, and Member of the German Parliament, stated that renewable energy is an opportunity, not a last resort. He suggested that frontrunners are necessary for a scale-up of renewable energy and encouraged the U.S. to play a leadership role. Emphasizing the importance of exchanging experiences, he described the German proposal for an international renewable energy agency and invited willing countries to join.

> "Improved efficiency and decarbonising the power sector could bring emissions back to current levels by 2050. To achieve a 50% cut we would also have to revolutionise the transport sector."
>
> **- Nobuo Tanaka,**
> **Executive Director,**
> **International Energy Agency**

U.S. Secretary of Energy Samuel W. Bodman emphasized the role of renewables and energy efficiency for a cleaner, more affordable and secure energy system that relies less on fossil fuels. He highlighted U.S. work with the major economies on a future climate change framework, underscoring technological solutions. He said the American public is calling for action, and stressed domestic concern about energy prices and volatility, as well as the needs of developing countries. Bodman highlighted investment in R&D and cellulosic ethanol demonstration projects and emphasized recent growth in photovoltaic and wind energy deployment.

Tony Hayward, CEO of BP, noted that the U.S., as the largest energy consumer, is key to any effort to address energy security and climate change, which, he noted, has become an issue in the upcoming U.S. election. He said cap and trade approaches are the way forward, and, while a global trading system should be the ultimate goal, post-Kyoto frameworks should not preclude regional efforts. He further stated that subsidies would be needed for critical new technology development until their effectiveness has been demonstrated and they become affordable.

Mohamed El-Ashry, Chairman of Renewable Energy Policy Network for the 21st Century (REN21), announced the release of the REN21 2007 Global Status Report. He stated that renewable energy has entered the energy mainstream, citing statistics on sectoral job growth, financial investment and national targets and policies. Highlighting the problems of energy security, energy poverty, and climate change, he called for the continuation and acceleration of the recent rapid scale-up of renewable energy technologies.

Nobuo Tanaka, Executive Director of the International Energy Agency, said energy security and climate change must be addressed together and pose an unprecedented challenge requiring immediate action, participation from major economies and, possibly, lifestyle changes. He outlined carbon-neutral technological options that could help reach the greenhouse gas (GHG) reductions required by 2050 to stabilize the climate. He said renewables need to generate more than 50 percent of electricity in 2050, highlighting education and training, as well as the need to find geological formations for carbon and nuclear waste storage. Tanaka noted a decrease in public energy R&D in industrialized countries and said time was a scarce resource.

Vinod Khosla, CEO of Khosla Ventures, underscored the failure of past econometric energy forecasts and said that current forecasts will prove equally wrong due to the inability to account for future innovation and technology. He added that the timetable for technology adoption is being reduced. Khosla then reviewed a number of innovative technologies being developed, and called for a stable regulatory framework underpinning a global trading system supplemented by transitional subsidies for promising technologies.

MINISTERIAL SESSION: THE ECONOMIC AND ENVIRONMENTAL BENEFITS OF RENEWABLE ENERGY

This closed, interactive ministerial session was facilitated by Claudia McMurray, U.S. Assistant Secretary of State for Oceans, Environment and Science. Steve Johnson, Administrator of the U.S. Environmental Protection Agency (EPA), and Andris Piebalgs, Energy Commissioner of the European Union (EU), delivered opening statements, following which other ministers and government representatives addressed the session.

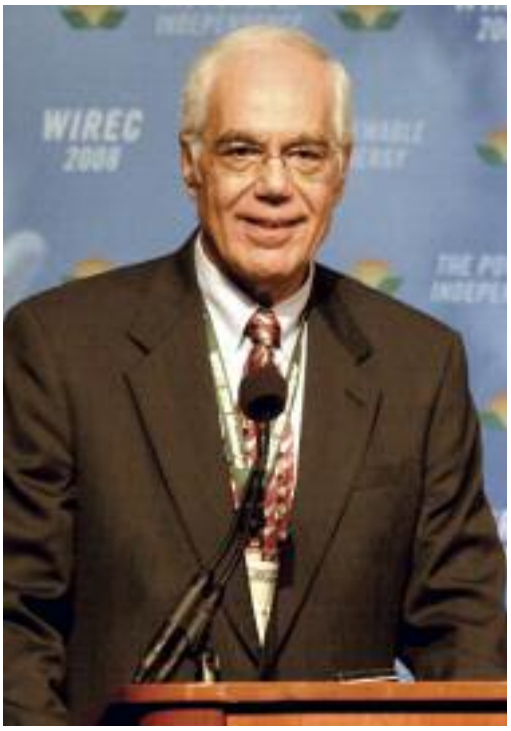
Participants heard about U.S. and EU renewable energy activities, including cooperative efforts between the U.S. and the European Commission. Work on the UN Framework Convention on Climate Change (UNFCCC) commitment to achieve a post-2012 agreement and activities under the Asia-Pacific Partnership, the Methane to Market Partnership, and the Energy Star Program were also highlighted. A few speakers discussed the EU's 20-20-20 commitment, which includes the goal of achieving a target of 20 percent of energy from renewables by 2020, up from 8.5 percent now.

Many speakers highlighted the importance of cooperative efforts with other countries, including an example of cooperation between the U.S., EU and Brazil on biofuels, and several emphasized the need for the U.S. and EU to work together on renewable energy. One speaker highlighted power sector activities such as clean coal, large-scale carbon storage and wind power, and transportation sector activities, such as increasing gas mileage requirements. Speakers underscored relevant national polices, such as efforts to strengthen institutions, increase energy efficiency, and promote public transportation and the use of rail rather than roads for transporting goods.

Speakers emphasized that the future of renewables depends on political will, and that agreement on a comprehensive framework is essential to create a stable investment environment. One speaker stressed the "tried and tested" geothermal and hydroelectric power renewable energy sources. Several participants highlighted the importance of adequate R&D funding.

Speakers noted the needs of developing countries, including small-island developing States, where energy consumption will need to increase substantially to achieve economic development. The high initial costs of renewable energy were noted by speakers who highlighted the possibilities for assistance to these countries. One speaker said sources of low-cost financing from international institutions should be identified.

Links between energy, climate, and security issues were emphasized by speakers, who said energy policies should be closely aligned with climate policy. One speaker outlined several advantages of renewable energy: it is based on domestic resources so it can be used in any country; it is not exhaustible; it diversifies energy sources; it does not have carbon emissions; and it can be a decentralized power source.



Mohamed El-Ashry, Chairman, Renewable Energy Policy Network for the 21st Century (REN21), announced the release of the REN21 Global Status Report.

Tony Hayward, Chief Executive Officer, BP

STAKEHOLDER SESSION: THE ECONOMIC AND ENVIRONMENTAL BENEFITS OF RENEWABLE ENERGY

David Hales, President, College of the Atlantic, chaired the afternoon stakeholder session, which focused on barriers and solutions to renewable energy scale-up. Dieter Salomon, Lord Mayor, Freiburg, Germany, and ICLEI (Local Governments for Sustainability) Executive Committee Member, described the barriers to effective involvement of local governments, highlighting a lack of expertise and difficulties affecting centralized energy generation. Corrado Clini, Chair, Global Bioenergy Partnership, identified trade barriers and agricultural subsidies as significant barriers to global scale-up. Dan Reicher, Co-Chair, ACORE and Director of Climate Change and Energy Initiatives, Google Inc., described Google's goal of installing one gigawatt of renewable energy capacity that is cheaper than coal. Lew Milford, President, Clean Energy Group, said additional barriers include lack of consensus on strategies, gaps in infrastructure, and a lack of financing mechanisms. Moetki Soejachmoen, Executive Director, Yayasan Pelangi, Indonesia, spoke of the significant costs associated with a scale-up, and stated that fixating on large-scale technologies instead of many small-scale technologies can hinder promising small-scale, distributed technologies. Arthouros Zervos, President, European Wind Energy Association and President, European Renewable Energy Council, said subsidies of conventional technologies pose a significant barrier to renewable energy scale-up. Tetsunari Iida, Executive Director, Institute for Sustainable Energy Policies, described four myths about renewable energy that hinder scale-up: high price; intermittency; low energy density; and land intensiveness. He stated that vested interests close to central governments make policy change difficult.

Among the issues explored during the discussion were: a lack of domestic policy frameworks in many countries; locked-in ways of thinking about renewable energy; and a failure to look across borders to identify policies that have been successful elsewhere. A number of participants stressed the importance of "community power" and expressed concern about a "monopoly" on renewable power generation by power companies and large corporations. Another stakeholder shared concerns about the policy environment noting the complexity of issues like transmission and planning. One stakeholder stated that waiting until prices come down is a barrier in and of itself because prices do not come down until large-scale production is attempted.

Panelists commented on ways to address the barriers. Among others, they highlighted: policy innovations; better factual communication on renewables; reaching a common understanding on what renewables can and will deliver; and the benefit that political support at the scale that oil pipelines, oil fields, and power lines had and have for leveling the competitive playing field. They also suggested learning from other non-energy distributive innovation areas, such as cell phones, and noted that the challenge is both informational and technological. Noting that Amory Lovins predicted 20 years ago many of the issues discussed today, Dieter Salomon said good ideas need time.

JOINT MINISTERIAL-STAKEHOLDER "STRAIGHT TALK" SESSION

The Joint Ministerial-Stakeholder Session was moderated by Hank Habicht, Vice Chairman, Global Environment and Technology Foundation, and Managing Partner, SAIL Venture Partners. Habicht opened the session by identifying five key issues for scaling up renewable energy technologies: a need for information and awareness; meeting the needs of financers; providing incentives for R&D and technology transfer; involving developing countries; and finding better ways to deploy existing technologies.

Commissioner Piebalgs summarized the ministerial session, noting that a number of fundamental questions were raised regarding land use, sustainability and how costs could be brought down. He said additional issues discussed included R&D needs, the potential of hydro and geothermal power, and the importance of doing things right from the beginning. David Hales summarized the points of consensus from the stakeholder session, highlighting the need for consistent and predictable policy, public awareness and rapid action.

> "However widespread use of renewable energy sources generates costs related to the introduction of new technologies, their positive impact on the environment and energy security improvement make such actions and projects profitable by all accounts."
>
> **- Andrzej Dycha, Under Secretary of State, Ministry of Agriculture and Rural Development, Republic of Poland**

Connie Hedegaard, Minister for Climate and Energy, Denmark, stressed the importance of long-term and short-term binding targets. She described Denmark's success in developing its renewable energy market and suggested that other countries study the strategies they have used. Kim Campbell, Club of Madrid, underscored the importance of energy efficiency and stressed the need for an economic plan of action with specific targets and goals. She highlighted the need to consider the real costs of energy, to identify the national strengths of each country on renewables, and for clear and consistent policies.

A number of government representatives then offered statements. The representative of Brazil said 45 percent of its energy comes from renewable sources, in spite of its size, diversity, and high rates of growth in population, and energy demand. He said many of its near-term targets will be met from accelerating energy-efficiency efforts. Brazil is determined to avoid trade-offs between food and energy production. The representative from Poland reported that his country is working to accelerate the process of increasing renewable energy sources without negative impacts on the environment. For example, he mentioned investing in biomass generation at a local scale that does not involve high transportation costs, and focusing on small-scale hydropower that avoids extensive damage to ecosystems. The representative from Spain reported his country has doubled its production of renewable energy. He noted that last year was the first to show a decrease in energy intensity. The representative from New Zealand highlighted his country's pledges to become carbon neutral and to increase its percentage of power generated from renewable energy.

During the discussion, one speaker said there is a need for case studies of countries and leaders who are at the forefront on these policies. Another asked panelists for ideas about how best to engage the financial community. Hedegaard said national market incentives should be in place and targets can help push markets in the right direction. She also stressed that enhancing energy efficiency does not involve costs and holds great potential. Additional issues discussed included: international benchmarking for feed-in tariffs; windfall profits; confidence-building; clear policies; how to implement feed-in tariffs in developing countries; and the importance of commitment. Morocco proposed developing a strategy based on existing grid connections to Europe to promote renewables in Morocco.

> "You are a mixture of idealists who see a bright future for renewable energy and others who are cold hard realists who understand rates of return and the importance of the bottom line. Both mindsets are needed."
>
> **- Dirk Kempthorne, Secretary of the United States Department of the Interior**

MINISTERIAL LUNCHEON

During a luncheon of ministers and other dignitaries, Dirk Kempthorne, Secretary, U.S. Department of the Interior, addressed the participants and highlighted the Department of Interior's experiences with renewable energy, including converting its own facilities to use renewable energy. He highlighted the need to take a holistic approach to renewable energy, and said the U.S. Administration is undertaking a national water census and a study of the dynamics of wild bird populations to address issues related to the development of biofuel and wind energy, respectively.

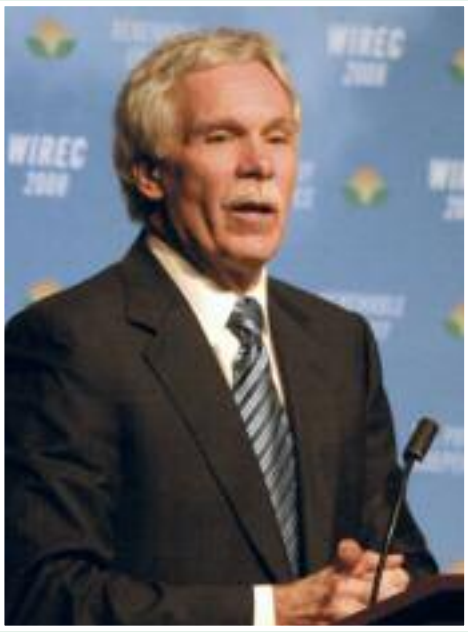
LEGISLATORS LUNCHEON

On March 5th, as part of the Washington International Renewable Energy Conference 2008, the State Department and the Renewable Energy and Energy Efficiency (RE&EE) Caucus, in conjunction with the Environmental and Energy Study Institute (EESI), organized an informal, off-the-record luncheon on renewable energy for foreign legislators attending WIREC 2008. Eight members of the House RE&EE Caucus, including RE&EE Co-Chairs Mark Udall (D-Colorado) and Zach Wamp (R-Tennessee) and parliamentarians and other senior officials from Argentina, Brazil, Germany, Greece, New Zealand, Portugal, Romania, Solomon Islands and Spain participated. Deputy Assistant Secretary of State, Dan Reifsnyder, served as moderator. Suggestions for approaches to promoting renewable energy included the creation of an international renewable energy agency; the establishment of a website to enable legislators to share best practices; greater use of geothermal energy; more open markets for ethanol; enlarging the market for emissions trading; and a greater commitment on the part of the global community to take action to reduce its dependence on oil.

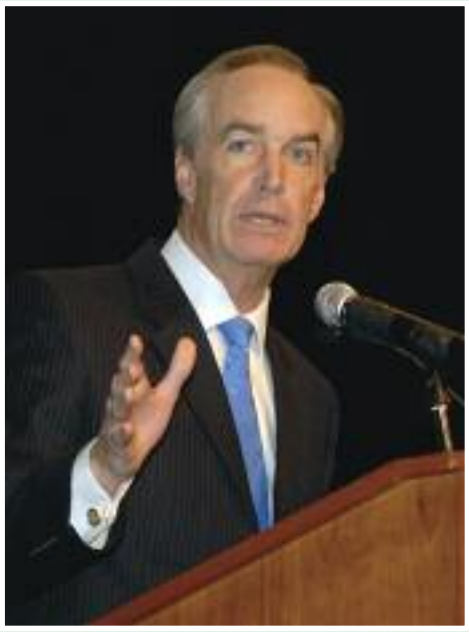
U.S. Cabinet Secretaries at WIREC

Samuel W. Bodman, Secretary, U.S. Department of Energy, said the American public is calling for action, and stressed domestic concern about energy prices and volatility.

Steve Johnson, Administrator, Environmental Protection Agency (EPA), delivered opening statements, following which other ministers and government representatives addressed the session.



Ed Schafer, Secretary, U.S. Department of Agriculture, underscored agriculture as a main contributor to renewable energy.



Dirk Kempthorne, Secretary, U.S. Department of the Interior, addressed ministers and other dignitaries attending the WIREC 2008 Ministerial Meeting during a luncheon session.

THEMATIC REPORT
Report of the Research and Development Focal Point

The R&D Focal Point consisted of a plenary session and four concurrent panel discussions.

The plenary session was chaired by Peter Robertson, Vice Chairman of Chevron Corporation, and the five speakers included Walter Kohn, 1998 Nobel Prize winner in Chemistry from the University of California, Santa Barbara; Ossur Skarphedinsson, Minister of Industry, Iceland; John Holdren, Teresa and John Heinz Professor of Environmental Policy, Harvard University; Li Junfeng, Secretary General, Chinese Renewable Energy Association; and Arthouros Zervos, President, European Wind Energy Association, and President, European Renewable Energy Council. The objective of the plenary session was threefold: To outline the broad R&D issues; identify the challenges in adopting various renewable energy technologies; and present actions needed to scale-up the use of renewable energy. The four concurrent panel discussions examined the various forms of renewable energies, namely, Bio-energy Feedstocks; Bio-energy Conversion and Electric Hybrid Vehicles; Wind and Solar; and Ocean, Tidal, Geothermal, Hydro, and Hydrogen. The findings of the R&D Focal Point were synthesized and presented in the WIREC closing session by Mildred Dresselhaus, Institute Professor of the Massachusetts Institute of Technology.

The speakers opened the R&D theme by identifying the policy issues that needed to be addressed to promote a major and rapid scale-up in the global deployment of renewable energy technology. They addressed critical issues for science, research, and technology development. They identified the most significant near-term R&D opportunities and challenges that need to be overcome and suggested how deployment can be accelerated. They discussed the most effective transfer modes to deploy science and technology from the laboratory to the market place and the role of the public and private sector. The panel also considered critical policies that can promote science development, research execution, and technology deployment at both national and sub-national levels. The following provides a summary of the major outcomes of these presentations and discussions.

General Observations: The speakers and participants manifested a strong sense of optimism about the future of renewable energy as well as an appreciation of the scale of the energy problem that deals with climate issues, energy, and economic needs of a growing population. The need for stable and predictable policies and regulations to ensure industry-university-government partnerships in R&D capacity building was highlighted. There was a general consensus that research, development, demonstration and deployment are iterative, not linear processes and that substantial and significant financial investment in R&D is needed. It was recognized that an increasing energy demand implies a growing workforce and developing human resources with the expertise and capacity to work in the emerging renewable energy business worldwide is critical. Capturing the enthusiasm of young people, using new interdisciplinary educational approaches, and distributing R&D workforce demands equitably worldwide were considered to be key work-force challenges. The

capacity-building also requires improving infrastructure in support of renewable energy, and developing strategies for investment in R&D.

Infrastructure issues require addressing the important need to integrate renewable energy sources into existing energy systems and optimizing ways in which discoveries made in the laboratories can be transferred to industries so that the time from laboratory to market deployment is significantly reduced. The need for establishing centers of excellence in interdisciplinary renewable energy technologies world-wide was highlighted. Several countries have already established renewable energy centers as well as consortia consisting of public (universities) and private-sector members. Recognizing that establishing national facilities may be too expensive for some countries, and building consortia requires a broad base of institutions, it was suggested that virtual centers can be created where expertise of scientists and engineers in these countries, working on different renewable energy technologies, can share their knowledge and expertise through modern means of communications, workshops, and group or individual visits. It was recognized that the world can capitalize on countries that have great expertise in specific renewable technologies. For example, Iceland is a world leader in geothermal energy technology while Norway and Brazil have great expertise in hydro-power and biofuels, respectively. It was suggested that mechanisms should be established through international partnerships and information sharing so that countries can benefit from the best practices of others.

Global earth observations can help governments and companies to manage energy resources more effectively. They can be used to monitor and forecast fluctuations in hydropower, solar, ocean, and wind energy sources; assess and predict the environmental impacts of energy exploration, extraction, transportation and consumption; reduce weather-related and other risks to energy infrastructure; match energy supply and demand; and inform other aspects of energy-policy planning in both developing and developed countries. The emerging Global Earth Observation System can make the relevant environmental information more accessible to decision makers in the energy sector.

The strategies for investment in R&D should be a global effort by combining the strengths of both the developed and developing countries. For example, U. S. President George W. Bush outlined in his keynote speech at the conference that his administration is committing US$2 billion over the next three years to create a new, international clean-energy technology fund to help address the growing problem of accelerating greenhouse gas emissions in major developing countries. Along with contributions from the U.K., Japan, and other countries around the world, this fund will increase and accelerate the deployment of cleaner, more efficient technologies in developing nations like India and China and help leverage substantial private-sector capital by making clean energy projects more financially attractive. President Bush further added that countries seeking access to the fund should be undertaking credible national plans to limit greenhouse gas emissions.

Professor Zervos pointed out that 60 percent of all public money spent on energy research and development from 1974 through 2004 was on nuclear energy and very little was devoted to energy efficiency, and renewable energy. Studies, for example, concluded, for example, that a 10-fold increase in wind energy research is needed. Professor Zervos also suggested that of the total energy expenditures in a given country, at least 3 percent should be devoted to R&D efforts in renewable energy technologies and that 2 percent of this should come from industries and 1 percent from government. This is needed as an annual investment to sustain innovation in renewable energy technology.During the four concurrent R&D panels, the speakers not only expressed their ideas and views on different renewable energy technologies and policy issues, but entered into a lively and interactive dialogue among themselves and the audience. The proceedings from these four sessions are summarized below.

Bio-Energy Feedstock: Gale Buchanan, Under Secretary for Research, Education and Economics, U.S. Department of Agriculture, moderated this session, in which speakers from government, industry and academia discussed prospects and concerns about a scale-up of bio-energy feedstock production. Dr. Buchanan asked the panel members and the audience to keep in mind the importance of capturing solar energy through green plant photosynthesis. The agriculture and forestry industries have an opportunity and responsibility to assist in renewable energy production. Miles Drake, Senior Vice President of Research and Development at the Weyerhaeuser Company, discussed scaling up biofuels production from forest resources, stressing the need to protect the economic value of forest resources; creating incentives for third-party sustainability certification; reducing financial risk; and integrating the forestry sector into carbon markets. He further described how joint

Panelists in a plenary session on research and development, moderated by Peter Robertson, Vice Chairman, Chevron Corporation.

ventures between supply and production companies, such as that formed between Weyerhaeuser and Chevron, should help in addressing these "scale-up" concerns. Kepler Euclides Filho, Executive Director of the Brazilian Agriculture Research Corporation (EMBRAPA), described Brazil's sugar cane to biofuels initiative that emphasizes the social aspects of the use of this crop to produce biofuels, specifically citing the ability to grow this crop on degraded lands. He also reviewed Brazil's overall biomass to bio-energy conversion programs with an emphasis on feedstock diversity, sustainability, and enhanced productivity of all commodities to ensure feedstock availability for all uses.

Some panelists raised caution flags about large-scale biofuels production. Timothy Searchinger of the Woodrow Wilson School, Princeton University, stated that, due to land use changes, using cropland to produce ethanol can be nearly twice as greenhouse-gas emission intensive as gasoline when using his defined assumptions. Wayne Smith, former Dean of the College of Agriculture, University of Florida, said that although in Florida there was no silver bullet to serve as the biomass feedstock, he was optimistic about bioengineered poplar as the principal feedstock of the state.

The panel concluded that feedstock diversity, sustainability, and economic viability are critical components to the success of achieving the renewable energy goals of all nations, and new partnerships among all players are needed. They stated that a global cooperative and integrated approach to address sustainable biomass availability and economic viability is necessary. Productivity and diversity of feedstock need to be enhanced, and a better understanding of feedstock options is needed.

Bioenergy Conversion Processes: Ray Orbach, Under Secretary for Science, U.S. Department of Energy (DOE), moderated this session. In his opening remarks he pointed out that breaking plant fibers into sugar efficiently is the biggest barrier to making biofuels cost-effective. A large-scale, integrated, interdisciplinary approach is needed to overcome this poorly understood process. A cellulosic biofuels industry is unlikely to emerge in its absence. He noted that the DOE has recently established three new Bioenergy Research Centers. Bruce Dale, Professor of Chemical Engineering, Michigan State University, presented a systemic approach to biofuel production and underscored the importance of three related issues: how to make biofuels economically viable and competitive with fossil fuels; how to generate positive environmental impacts from biofuels; and the role of the biofuel industry in economic growth, particularly in rural areas. This panel also emphasized the need to establish local processing plants to improve energy efficiency and to provide local employment. Ideally, farmers, cooperatives and/or other rural interests should participate in the processing value chain for biofuels, thereby capturing part of the increased value. He further predicted that for cellulosic biofuels, the center of gravity is likely to shift toward biomass supply chain and feedstock logistics in less than a decade. Additional funding will be necessary to provide the technology, business models and research to support this shift.

Opportunities also exist to preprocess biomass for cellulosic ethanol production in regional biomass processing centers which could simultaneously generate animal feeds and biorefinery feedstocks. James Dumesic, Steenbock Professor and Chair, Department of Chemical Engineering, University of Wisconsin, described technical research on biofuels, especially the work of his group in aqueous phase reforming to target the conversion of sugars and polols to alkanes. He further indicated the utility of other platform chemicals as intermediate chemicals in the conversion of biomass to liquid fuel. Jane-Eric Sundgren, Senior Vice President, Public & Environmental Affairs and a member of the Group Executive Committee of the Volvo Group, said the biofuels portfolio must be evaluated for its utility under different prevailing conditions. He said the key issue is how to increase conversion and utilization efficiency.

In the discussion that followed, various trade-offs between feedstock, conversion technologies and efficiency were highlighted. The panel concluded that all biofuels are not created equal and that different geographic locations may specialize in different biofuels. Biomass supply and logistics need to be developed, and local communities must capture some of the economic benefits of biofuel processing. The panel also suggested that conversion of sugars to biofuels other than ethanol can benefit from the use of nanotechnology. R&D efforts should also be devoted to enhancing the efficiency of battery storage technology.

Mildred Dresselhaus, Institute Professor, Massachusetts Institute of Technology (MIT) reviewed the Plenary and four sessions dealing with research and development.

"I'm convinced that energy is one of the make or break challenges of our times. Unless we put our minds to it, the second half of the century is going to be the beginning of a worldwide disaster. on the other hand, if we do put our minds to it, I'm convinced we can look forward to a better future, and solar energy is part of that solution."

- Nobel Laureate Walter Kohn

Panelists in the session on research and development of wind and solar, moderated by Joachim Luther, Chairman of the International Science Panel on Renewable Energies (ISPRE).

Wind and Solar: This session was moderated by Joachim Luther, Chairman, International Science Panel on Renewable Energies (ISPRE), during which participants discussed the history and future of wind and solar R&D. Luther announced that ISPRE will release a global review of renewable energy research and development in May 2008. He underscored cost reductions, grid integration/storage and sustainable production schemes.

Nathan Lewis, George L. Argyros Professor of Chemistry, California Institute of Technology, pointed out that more energy from the sun strikes the earth in one hour than all the worldwide energy use in a year. He said photovoltaics (PV), which scales down to home usage better than solar thermal electricity generation, is the only renewable energy source with immediate potential to address a major part of our energy needs. Since current electricity generated by photovoltaic cells costs US$0.20 - 0.30 per kilowatt per hour fully amortized, costs have to be brought down by developing more efficient materials. This is where nanotechnology may play a role and where research into nanomaterials capable of absorbing light from the entire solar spectrum may provide rich dividends. He pointed out that the PV use is growing at 30 percent per year, but that the industry is currently limited by the capacity to produce solar cells and that a million solar roofs per year for 50 years are needed to reach 10 percent of U.S. electrical capacity. He also stated that the world cannot meet its future energy needs with noncarbon impact without using the sun. Arnold Goldman, Founder and Chairman, BrightSource Energy, emphasized the need for stable, long-term government policies, and rules for access to transmission lines and early transition incentives. He also emphasized the need for better grid interoperability.

Dan Arvizu, Director, National Renewable Energy Laboratory (NREL), noted that wind capacity grew 40 percent in 2007 and now comprises 1 percent of total energy capacity and contributed 26 percent of new generating capacity in the U.S. last year. He indicated that this growth is likely to continue in the U.S. if there are stable policies. The ability to connect to the large existing grid in the U.S. is an important element for wind and solar energy. Research in wind power must focus on a balanced portfolio. In the near term, greater R&D emphasis on grid integration and operational issues, such as gearbox reliability and wind forecasting, will enable reliable operation of the current generation of turbines. Ultimately, to economically capture a greater portion of the wind resource, R&D is needed on lighter and larger rotors; small, distributed systems; storage; and on materials and technologies that will enable extending the technology to offshore wind applications in deeper water. He noted that investment in wind capacity depends on stable and consistent government regulations and power company policies, and that future enhancement will depend on filling the pipeline for research and development. The ensuing discussion focused, among others, on the returns of investment on research.

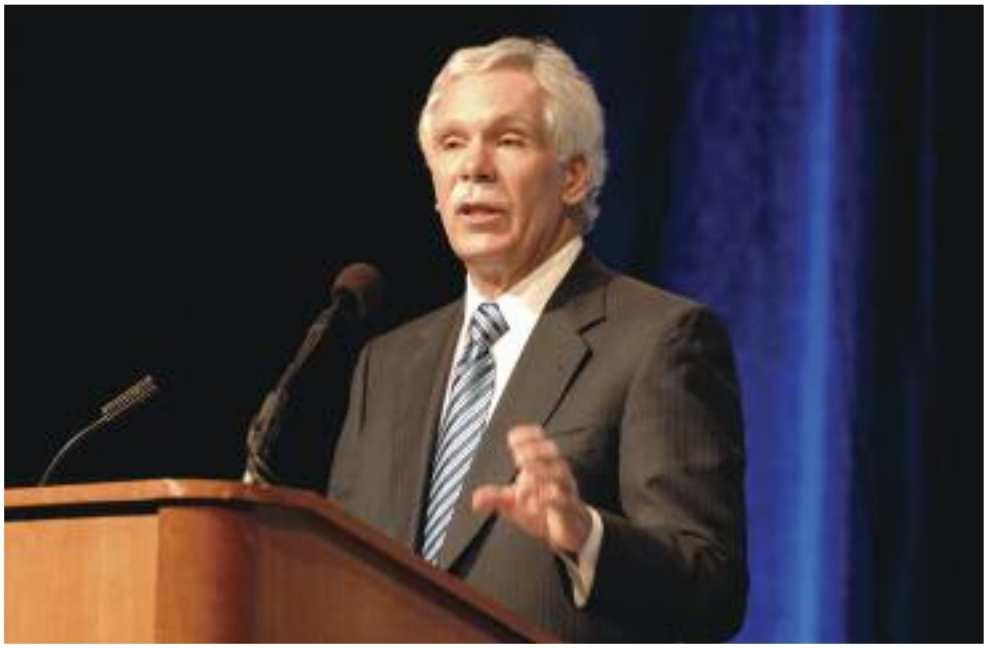
Storage is a major issue for both solar and wind energy, and large systems are needed perhaps using the virtual storage offered by a large grid. Bidirectional grid integration is crucial to serve as storage for distributed sources, such as wind and solar. Thermal storage techniques are adequate in the case of solar for cloud cover and overnight storage, but not for longer cycles. Transmission companies do not have incentives needed to encourage them to use more distributed sources such as wind and solar. There is tremendous potential for a large grid connecting solar and wind power from North Africa to the Middle East and Europe. A larger market for economies of scale for both technologies is needed. A reduction in cost by a factor of two will have a tremendous impact, and this can come from economies of scale. Stable policies will allow high upfront costs to be fully amortized and investors to use equity markets and borrowing potentials to fully utilize life-cycle costing. Utilities maximize their utility under constraints, so it is crucial to understand subsidies and taxes/tax breaks contained in current policies, and to establish stable policies. There is a tremendous need to at least double or triple the current research budget for efficient storage and transmission.

Ocean, Tidal, Geothermal, Hydro and Hydrogen: Jason Bak, Chief Executive Officer, Finavera Renewables Inc., moderated this session. He underscored the need for new R&D paradigms, including open-domain technology development, and stressed the importance of technology development, commercialization, and deployment at national and sub-national levels. Liv Monica Stubholt, Deputy Minister of Petroleum and Energy, Norway, highlighted the need for innovative approaches to increase deployment of existing renewable energy sources. She described Norway's 99 percent renewable electricity share and the public-private partnership in osmostic power. José Achache, Director, Group on Earth Observations (GEO), stressed geothermal power's availability and non-intermittency. He said land will be required to meet the housing, food, water and other requirements in a world of 10 billion people, underscoring the importance of land use. Thorsteinn Sigfusson, University of

Iceland, provided an overview of marine renewables, including wave power, ocean thermal energy and tidal, geothermal power and hydrogen as an energy carrier. He also noted Iceland's lack of fossil fuel resources. Kristjan Guy Burgess, Executive Director, Global Center, Iceland, underscored geothermal energy in Iceland. Noting that policy options depend on technology, he said hydroelectric and geothermal technologies need more deployment in developing countries.

Several technological challenges were identified as needing further R&D attention. Among these are corrosion and fouling that are associated with ocean and tidal power as well as with drilling for geothermal energy. Corrosion and fouling is a major source of costs and maintenance. Salt water makes this issue an order of magnitude worse. The same issues arise with geothermal energy when drawing salt water. Some R&D areas to address these problems include development of new materials that can withstand high temperature and pressures, and are resistive to corrosion. R&D in nano-technology and surface science is needed to address these problems. Fouling, such as paints on ocean structures, can kill wildlife and there is a need to develop non-toxic alternatives. Different technologies are needed depending on geology, e.g., thin crust (like in Iceland) or very deep in some areas (like in dry rocks in France) where one needs to artificially fracture rock and drill down to 5,000-6,000 meters. In Switzerland drilling directly below cities (e.g., Basel) may be necessary. Not only does one need better efficiency, but fracturing rock at 5,000 meters is difficult and improved R&D methods need to be developed. Better knowledge of geology in the first 10,000 meters is also needed. Improving geological understanding at these depths would also afford cross-cutting benefits for carbon capture and storage.

In the area of the hydrogen economy, improvements are needed in its production, delivery, storage, and fuel cells. For example, efficiency of fuel cells is a significant issue requiring additional R&D. Storage is also a factor and materials need to be developed that can store hydrogen with large gravimetric and volumetric density and operate at near ambient thermodynamic conditions. Production of hydrogen from emitted gases from boreholes (e.g., H2S) should be considered and materials capable of withstanding hydrogen embrittlement in the hydrogen delivery process need R&D. Ocean energy is widely dispersed and connection to the grid is difficult. R&D is needed for concentrating technologies (similar to concentrators for solar energy) to make ocean energy generation more efficient. Osmotic power (aka, estuary or delta power) needs to be produced closer to population and industrial centers so as to minimize transmission losses.



Ed Schafer, Secretary, U.S. Department of Agriculture, underscored agriculture as a main contributor to renewable energy.

"Instead of new technologies taking hold in urban centers first and then slowly making their way to the countryside, renewable energy gives rurals areas a chance to hold the power… literally."

- Ed Schafer, Secretary, U.S. Department of Agriculture

Andrezej Dycha, Under Secretary of State, Ministry of Agriculture and Rural Development, Poland.

Arthur Cua Yap, Secretary, Department of Agriculture, Philippines

Thomas C. Dorr, Chairman, Secretary's Energy Council, Under Secretary for Rural Development, USDA, drew together ideas from the sessions on Agriculture, Forestry and Rural Development, and State and Local Authorities.

Andris Piebalgs, Energy Commissioner, European Commission

"From an agricultural perspective, the question is not Food vs. Fuel. It is Food AND Fuel, and both are opportunities for agriculture."

- Thomas C. Dorr, Under Secretary for Rural Development, U.S. Department of Agriculture

THEMATIC REPORT

Report of the Agriculture, Forestry and Rural Development Focal Point

The Agriculture, Forestry and Rural Development Focal Point consisted of a plenary session and four concurrent ministerial panel discussions.

The plenary session was chaired by Thomas Dorr, Chairman, Secretary's Energy Council, and Under Secretary for Rural Development, U.S. Department of Agriculture. The five plenary speakers included Chuck Conner, Deputy Secretary of Agriculture, U.S. Department of Agriculture; Marcos Jank, President and CEO, Brazilian Sugar Cane Industry Association (UNICA); the Honorable Andrzej Dycha, Under Secretary of State, Ministry of Agriculture and Rural Development, Republic of Poland; the Honorable Arthur Cua Yap, Secretary, Department of Agriculture, Republic of the Philippines; and Richard Tolman, CEO, National Corn Growers Association. Weather prevented Mr. Tolman's physical presence, but he forwarded a presentation to include in the WIREC conference report.

The objectives of the plenary session were to frame the issues, including technical, environmental, and political; identify opportunities for agriculture and the rural sector; and to assess the role that agriculture and forestry could play in scaling up renewable energy and promoting rural development. Agriculture, forestry, and rural communities are producers/suppliers and consumers of energy and energy feedstocks as well as sources of investment funds and boosters of renewable energy. Production assets can play a pivotal role in improving the environment, strengthening rural economies through jobs and wealth creation, and empowering rural communities with additional educational, health, and other public services.

The concurrent panel discussions dealt with four broad issue areas related to the scale-up of renewable energy, development and sustainability: Sustainability, Technology, and Development; Rural and Economic Development; Development of Biobased Products Industry (Non-Fuels); and the Role of Forestry in Renewable Energy.

At the closing session, the findings of the Agriculture, Forestry and Rural Development Focal point were then synthesized and presented by Thomas Dorr.

General Observations: There were several themes that were common throughout the four concurrent ministerial session discussions.

- Agriculture, forestry, and rural communities are taking center stage in the advance of renewable energy. There is a growing recognition of the multidimensional roles that the agricultural and forestry sectors around the world can play in producing and providing feedstocks for production of transportation fuels and power, and the benefits and growth that could accrue to rural communities. The potential and opportunities are not without risk – scale-up must be achieved sustainably, be unique to country resources and asset based, and should not degrade the environment.

- There was a general recognition of the potential of renewable energy here and now. Participants were encouraged by the rapid development of renewables that is now beginning in so many places around the world.
- There was a general consensus of the important role that agriculture and forestry plays in the production of renewable energy; and the need to bring these sectors into discussion of scaling up as a full partner. There is widespread recognition that farmers and rural communities can benefit (i.e. income improvement, jobs, availability of energy, health care and education) around the world from growth in renewable energy.
- A key observation that was made by all of the speakers was the positive impact that renewable energy development has had on farmers and small communities. This impact was noted both in prices for commodities, as well as creating economic development, wealth creation, and new high paying jobs in rural areas.
- It was mentioned in a number of ways that, ultimately, renewable energy from the agriculture, forestry, and rural development perspective is about people – their challenges, opportunities, and lives as participants in the global economy. This was evidenced by specific citations of statistics such as the billions of people who still rely on biomass for cooking, or the number who heat their homes by fire and die from respiratory diseases or house fires, or those rural areas that lack access to basic utilities and services.

The interactive ministerial session was facilitated by Claudia McMurray, U.S. Assistant Secretary of State, Oceans, Environment and Science.

- There is no single path to scaling-up renewable energy and deployment. Objectives may be widely shared, like energy security and reduction in greenhouse gas emissions, but the policies required across countries may differ, and could be influenced by political systems, resources, social concerns, and general development. Stated more simply, one size does not fit all.
- Governments and industry must continue to invest in research to advance science and technology if rapid scale-up and deployment is to be achieved.
- A sense of optimism permeated the discussions. Adversity, challenges, and barriers can be overcome – be it food versus fuel or bioenergy versus conventional forestry products. A balance can be achieved.

In-depth discussions were carried out at four concurrent sessions where panel members not only expressed their ideas and views on different renewable technologies but entered into a dialogue between themselves and the audience. The proceedings from these four sessions are summarized below.

Sustainability, Technology, and Development: Claudia McMurray, Assistant Secretary of State for Oceans, Environment and Science, U.S. Department of State, moderated this session. Speakers represented the public sector, industry, and civil society. Panelists included: Juan Pablo Bonilla, Sustainable Energy and Climate Change Initiative (SECCI) Coordinator, Inter-American Development Bank; Dr. Prodipto Ghosh, Senior Advisor to Prime Minister of India and Distinguished Fellow, The Energy and Resources Institute; Dr. William D. Dar, Director General of the International Crops Research Institute for the Semi-Arid Tropics; the Honorable Manoel Vincente Bertone, Under Secretary for Production and Agro Energy, Ministry of Agriculture, Brazil.

Ms. McMurray noted that agriculture, forestry, and rural development have many intersections with the issues of sustainability, technology, and development. She suggested that perhaps the most visible evidence of this is the biofuels boom, which if done sustainably offers huge potential for increased economic development and energy security, as well as decreased greenhouse gas emissions and air pollutants. She then posed a number of questions around the issue of sustainability and protection of the environment and natural resources. She indicated that some of our brightest minds are working to turn woody biomass into a cheap, efficient, and environmentally sound sources of fuels and renewable energy, and that there is no single answer to the questions posed. All should be seeking answers and solutions to scaling up renewable energy in a sustainable manner. She pointed out that the U.S. is committed to sustainable biofuels and the country has many years of experience in implementing sustainable agriculture policies.

Mr. Bertone focused on factual information regarding Brazil's ethanol industry, sustainability, and trade plans. He indicated that Brazil initiated its ethanol program 30 years ago – currently 45 percent of the energy consumed is renewable; 90 percent of the cars are flex-

fuel that can use any mixture of ethanol; more ethanol is consumed than gasoline; half of Brazil's land base is in forestry; and only 1 percent of the Brazilian land base is used to produced sugarcane ethanol. Brazil has a goal to develop a sustainable renewable-energy market and the government is proposing ecological zones to curtail development in the Amazon (sugarcane is grown 2,000 kilometers from Amazon Region). Last, Brazil is hoping to develop an international market for biofuels, so countries that can produce biofuels in a sustainable manner can export to countries that cannot.

> "…growth in GDP is closely correlated with access to modern energy, where a 1 percent increase in GDP is correlated with a 0.5 percent increase in energy consumption."
>
> **- James R. Kunder, Deputy Administrator, United States Agency for International Development**

Mr. Bonillia stressed the need for continued investment in research and science because the adoption of new technologies in renewable energy, energy efficiency and biofuels has been the impetus for growth of renewable energy in Latin American and Caribbean countries. He also discussed how SECCI supports sustainable energy and climate change, carbon financing, funds energy efficiency projects, provides grants to capture CO2 from coal plants and adaptation or modification projects, e.g., modify wind farms so they can withstand a hurricane in the Caribbean.

Prodipto Ghosh noted that much of India lacks electricity, and its goal is to improve quality of life for the 40 percent of the population which survives on very low incomes. The country has large amounts of biomass, large cattle herds, and much solar energy potential. However, there are severe limits to using biomass for energy: food security prevents use of cropland and forests for energy use; crop residues are needed for cattle food; and land used for energy production is restricted to wasteland and degraded forests. For countries like India recognition of resource availabilities and constraints should dictate sustainable approaches. For example, transportation modes should shift to electric systems based on solar or hydrogen.

William Dar stated that 1.6 billion people in the world lack basic energy and many people only have energy for cooking. New biomass systems in rural areas could provide energy and offers tremendous opportunities and benefits to these people. He noted that biofuels reduce green house gas (GHG), increase economic growth in rural areas, and increase income, but can lead to higher food prices. Climate change benefits may be offset by land use changes and more work is required for an objective assessment. Dr. Dar stated that sweet sorghum can be grown in Asia and Sub-Sahara Africa, has high yields, does not compete with food crops, uses little water, is CO2 neutral, has a net energy balance of 8 to 1 (when converted to ethanol), and over time, with productivity gains, will reduce the impact on land use. In addition, jatropha is good for making biodiesel because it can be grown on marginal land. What is needed is investment in private/government partnerships and in research and technology.

Rural and Economic Development: James R. Kunder, Deputy Administrator, U.S. Agency for International Development, moderated this session. In his opening remarks he pointed out the link between renewable energy development and rural economic growth, and he emphasized that renewable energy has a key role to play in rural economic development for all countries, developed and developing alike. This will require cooperation from all stakeholders including governments, development agencies, the private sector, NGOs and local communities. The panel then discussed the opportunity for renewable energy applications ranging from the production of bio-based feedstocks to wind power development on rural farmland to create jobs and stimulate economic growth in rural areas. Panel members included: Jamal Saghir, Director for Energy, Transport, and Water, World Bank; Sarah Adams, CEO, Global Village Energy Partnership (GVEP) International; Doug Faulkner, Deputy Under Secretary for Rural Development, U.S. Department of Agriculture; Yasuo Watanabe, Deputy Director General, Minister's Secretariat, Ministry of Agriculture, Forestry and Fisheries (MAFF), Japan; and the Honorable Albert Butare, Minister of State in charge of Energy and Communications, Ministry of Infrastructure, Rwanda.

> "…developing countries face the challenge to provide sustainable cleaner energy access for themselves, whilst avoiding the destructive impact of the development routes taken by the existing industrial nations over the last 200 years."
>
> **- Sarah Adams, CEO, Global Village Energy Partnership**

Albert Butare said they wanted to expand the grid and diversify energy sources in rural areas, which hold 90 percent of the population and where grid coverage is less than 5 percent. Doug Faulkner said clean energy, renewables and efficiency could be one of the greatest opportunities for rural and agricultural development in the U.S. Sarah Adams described their bottom-up approach based on local resources and capacities, local partnerships, and small grants projects. Jamal Saghir described the power crisis in Africa, emphasized that off-grid generation does not compete with on-grid, and said 40 percent of the World Bank's US$1.4 billion investment in energy last year was for low-carbon systems. Yasuo Watanabe described the Biofuel Nippon Strategy, R&D related to the Strategy and the increase in the number of "Biomass Towns" in Japan from the current 100 to 300 by 2010.

Production and utilization of renewable energies spur rural and economic development. Agriculture and other sectors around the world are increasingly providing financial assistance in the form of grants, loan guarantees, and loans to help finance renewable energy projects. This provides an opportunity for farmers and entrepreneurs to take advantage of the expansion of renewable energy, not only by providing feedstocks for renewable production, but also to participate as owners of renewable production facilities – across all types of renewable energy. Given that 80 percent of the world's economies are still agrarian, the scale-up of renewable energy offers significant economic opportunities for rural communities across the world including private ownership and equity positions. These opportunities can culminate in improved income, job creation, and improved education, health care, distributive computing, telecommunications, and public services.

Development of Biobased Products Industry (Non-Fuels): This session was moderated by Dr. Roger K. Conway, Director, Office of Energy Policy and New Uses, U.S. Department of Agriculture. Panelists represented the public and private sectors and civil society, and included: Dr. John Renieri, Vice President and General Manager for Biobased Materials – Energy and Specialties of the DuPont Corporation; Boyd K. Rutherford, Chair, USDA Sustainable Operations Council, Assistant Secretary for Administration, U.S. Department of Agriculture; and Ibrahim Togola, Director of the Mali Folkcenter/DURES Network, Citizens United for Renewable Energy and Sustainability of Mali. Dr. Conway introduced the topic and noted that production of biofuels seems to be a priority in order to substitute for fossil-based fuels. He then emphasized that the development of markets (demand in particular) for co-products or by-products from the production of biofuels can create additional revenue streams and could further replace fossil- or petro-based products such as chemicals. In countries whose renewable energy industry is in its infancy, developing the biobased products industry (production of and demand for) simultaneously with development of the renewable energy sector can expedite the scale-up of renewable energy. A wide range of topics were discussed including: research, development and bringing new products to market; role of government in generating demand/pull for products; uses of biobased (non-fuel) products; and sustainable development.

Dr. Renieri emphasized the role of scientific discovery in creating platforms for the development of new and novel biobased products, including motor fuels, polymers with a variety of properties, functional fluids, and other product feedstocks. DuPont's development

Chuck Conner, Deputy Secretary, U.S. Department of Agriculture

"In the long-term, one of the best ways to keep food prices stable is to keep energy costs stable. And doing that will require us to create alternative energy sources."

- Chuck Conner, Deputy Secretary, U.S. Department of Agriculture

of Butanol, a higher alcohol with an energy content approximately equal to that of gasoline, is one such example. Innovative plant breeding techniques have not only enhanced the yields of feedstock plants such as corn and soybeans but have also introduced new attributes to crops. A more fundamental understanding of cellular biology has broadened the array of specialized enzymes and feedstocks available for use in product development. Public/private partnerships to construct the first manufacturing plants using new technology would be helpful in moving forward the commercial availability of new and innovative biobased products.

Mr. Rutherford discussed the evolution of biobased products, noting that historically the U.S. had a heavy dependence of biobased products, until the emergence of inexpensive petroleum production and its petrochemical manufacturing. Once again, the trend is shifting toward biobased products, both for the reasons Mr. Renieri emphasized and also due to the increased environmental sensitivity and desire to lighten the production and use of larger carbon-footprint products. Rutherford noted that currently nearly 8 percent of total oil consumption is used in the production of materials, including plastics. This market uses 25 billion gallons of oil each year. This shift currently underway in the U.S. will lessen dependence on foreign oil, create new jobs and increase economic activity in rural communities, and better manage the carbon cycle.

> "The active participation of poor farmers through their producer organizations is the best guarantee that biofuels is a boon rather than a bane for the world's poor."
>
> **- William D. Dar, Director General, International Crops Research Institute for the Semi-Arid Tropics**

A new federal program to promote the use of biobased products, the BioPreferred program, has been delegated to USDA to implement and operate. It has two components: preferred procurement of biobased products by federal agencies, and a labeling program for these products. This program has the potential to make a substantial difference, since the U.S. government is one of the world's largest buyers of products and services amounting to about US$400 billion per year. To date, USDA has identified over 10,000 commercially available biobased products within more than 170 groupings of products or categories. Mr. Rutherford has established implementation goals for this program, including increasing USDA contracts containing biobased products by 50 percent by 2012.

Mr. Ibrahim Togola suggested that many multi-national companies and foreign industries see Africa as a provider of low-cost raw materials to help industrial countries meet their biofuel targets. While it is true that Africa produces a rich array of biobased feedstocks and many producers would be eager to supply this market, caution must be exercised. To bring sustainable benefits to rural African populations, there must be local ownership, production, processing, and local use of the product. Only when local and national needs are satisfied can exports be considered.

Jatropha has been suggested as a desirable energy crop that will produce oil for processing into fuels and other products and also produce organic fertilizer or biogas from

its plant residues after extracting the oil. However, care must be taken to assure sustainable production and that energy crop production does not replace needed food production.

Good public policy is a necessary ingredient in any ramping up of biofuels and bioproducts production to assure that benefits to rural residents and the environment materialize. Private sector involvement by thousands of small and medium enterprises that produce biofuels for local use will provide maximum benefits to the local and the national economies. It is important to create and cater to a local market, as a precondition to the development of a stable biofuel industry. Finally, attention must be given to social risks such as land use changes and loss of tenure by indigenous people, along with sensitivity to food insecurity issues that may arise.

The Role of Forestry in Renewable Energy: Mark Rey, Vice Chairman, Secretary's Energy Council, and Under Secretary for Natural Resources and Environment, U.S. Department of Agriculture, moderated this session. The session discussed the opportunities and barriers associated with using wood for energy. The challenge of integrating economics, the environment, sustainability, and rural development when using forest biomass for producing energy was noted.

"…with increasing energy consumption and cost of fossil energy, coupled with environmental and waste management concerns, biobased products are gradually finding their place in the market."

- Boyd Rutherford, Chair, USDA Sustainable Operations Council, Assistant Secretary for Administration, United States Department of Agriculture

The panelists discussed technology, policy, cooperation, infrastructure changes and implications for conventional forest products industry from several perspectives. Donna Harman, President and CEO, American Forest & Paper Association, noted the trade-offs between traditional pulp and paper products and the use of forest resources for bioenergy production. Mauri Pekkarinen, Minister of the Economy, Finland, emphasized the importance of forest biomass-based energy in Finland, highlighted that 70 percent of renewable energy in Finland is wood-based, and emphasized the importance of sustainable management and research support for optimal use of all residues in bioenergy production. Sundar Bajgain, Head of Biogas Programs, Bangladesh, noted the importance of biogas plants to rural economic development, to welfare of children and women in developing countries, and the indirect benefits of tropical forest conservation. Dr. Tom Richardson, Chief Executive Officer, Scion Group, discussed the importance of forestry in New Zealand's energy strategy and stressed the importance of technological advancements in production and conversion. Robert M. Persaud, M.P., Minister, Ministry of Agriculture, Guyana, discussed the transition from charcoal and fuel-wood to new technologies and policies that reduce greenhouse gases.

Forest resources and "woody biomass" represent a vast renewable feedstock for transportation fuels and combined heat and power. Forestry already has and will likely continue to have a significant and growing role in the production of renewable energy;

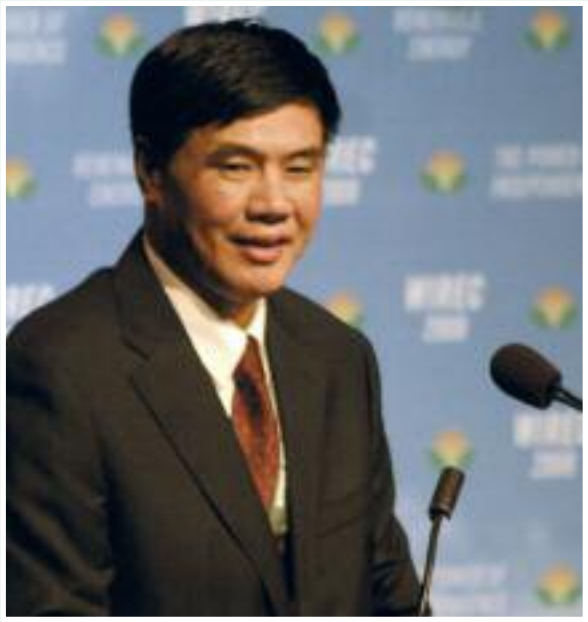
WIREC plenary sessions had audiences of over 2,000 people

however traditional forest products should not be discarded or reduced (unless dictated by market operations). Most of the wood consumed around the globe has been historically for heating fuels, but wood can become a major source for industrial energy and liquid transportation fuels. Most of all, using small diameter wood for energy production can mitigate wildfire risk, reduce greenhouse emissions, and contribute to rural economies.

The diverse panelists (public and private sectors, and non-governmental organizations representatives) noted the importance of forests in bioenergy and climate change with emphasis on the importance of its sustainable production, research and development, and continued production of conventional products. Specific points to note included:

- Forests have significant potential to contribute to renewable energy and to reduce greenhouse gases (GHG).
- Sustainability is critical to use of forest biomass for bioenergy.
- Balancing between bioenergy and conventional forest products is very important.
- More research and development is needed to make more forest-based renewable-energy production economically viable and environmentally sustainable.

Maud Olofsson, Deputy Prime Minister and Minister for Enterprise and Energy, Sweden



Zhang Xiaoqiang, Vice Chairman, National Development and Reform Commission, China

THEMATIC REPORT
Report of the Market Adoption and Finance Focal Point

The Market Adoption and Finance Theme achieved an important milestone by bringing finance, energy, and environment Ministers from developed and developing countries together with financiers, private sector leaders, entrepreneurs, and NGOs. Together, they addressed issues and opportunities for accelerating renewable technology transition from lab to market and the financing necessary for mass deployment. This summary report synthesizes the key findings from nine Market Adoption -Finance panel discussions. It also describes the structure of the theme's sessions and summarizes the main points of the speakers in the opening plenary and each of the nine concurrent sessions.

General Observations: There were several themes that were common throughout the concurrent ministerial sessions.

- *Grid Interconnectivity* is noted as a critical component of renewable energy adoption. A greater compatibility of standards and codes is needed for renewable energy producers to build once and integrate everywhere.
- *Research and Development Alignment and Collaborative Efforts* must be intensified. Currently much of the global funding is geographically bounded. Highest and best use of resources can be ensured through a greater amount of global collaboration and technology transfer.
- *Policy Experimentation*: It is important to take heed from successful and unsuccessful policies and recognize that one size does not fit all. Efforts must be intensified for improved awareness of successful policy practices.
- *New Development Models*: Leapfrog last-mile electrification models in favor of village to grid distributed generation. Rural areas should build local off-grid power generation first, rather than wait for central power grid to arrive. Regulations and infrastructure (both physical and organizational) must be established to enable individuals and communities to sell locally-produced energy back to grids.
- *Emerging Markets*: Enormous potential exists for solar, geothermal, and hydro in emerging markets. However, limited infrastructure and lack of appropriate institutions may be driving energy prices to be very high. For example, participants noted that in the Sahel and Rift Valley, electricity cost is anywhere between US$0.30 and 0.50 per kilowatt hour despite exceptional renewable energy sources.
- *Liberalization of Energy Markets*: Participants noted that approximately 80 percent of global energy assets were owned or controlled by governments. An accelerated transition to renewable energy requires a decoupling of production, transmission, and consumption of energy. In addition, governments should work together to lower tariff and non-tariff barriers for renewable energy technologies and services to promote affordable, renewable-energy technology transfer around the globe.

- *Suboptimal Private and Public Capital Markets*: Investments in the clean technology market require large sums of capital over long-time horizons with relatively high levels of risk. It was noted that the venture capital community has the risk appetite but not the capital to scale projects, and private equity players may have the balance sheets but not the risk appetite. There is a need for larger sums of capital with greater risk tolerance. It was also observed that most of the scale-up is being financed through equity rather than through debt-financing leading to higher costs of capital.
- *Arbitrage between Renewable Technology and Markets*: It was noted that renewable energy technology can speed its path-to-market by finding the optimal geographies in which to scale. For example, panelists noted that certain cellulosic technologies in the U.S. could be scaled up in Brazil at a fraction of the cost and time.
- *Regulatory Consistency*: The need for comprehensive (beyond mandates) and consistent policies echoed throughout the panels. One participant called for policies to be "legal, long, and loud."
- *Biofuels Sustainability*: Biofuels sustainability was discussed at each of the renewable fuels sessions and brought up by Vinod Khosla on the opening day. Many believed this issue was not well understood and often distorted. Participants acknowledged that there were good and bad methods to produce biofuels and we ought to distinguish between them.

STRUCTURE OF THE MAD-FINANCE THEMATIC DISCUSSIONS

The theme consisted of a plenary session and nine concurrent panel discussions. The concurrent panels were grouped into three categories:

- Market Adoption of New Renewable Energy Technologies;
- Policies and Tools for Financing Renewable Energy in Mature Markets; and
- Policies and Tools for Financing for Renewable Energy in Emerging Markets.
- Within each category, three concurrent sessions were held to focus on application-specific challenges: Grid-Connected Generation; Distributed and Off-Grid Generation; and Renewable Fuels.

PLENARY SESSION

The plenary session was chaired by Gregory Manuel, Special Advisor to the Secretary of State for Alternative Energy, U.S. Department of State, and Andy Karsner, Assistant Secretary for Energy Efficiency and Renewable Energy, U.S. Dept of Energy. The co-chairs provided opening remarks and introduced four plenary speakers:

- Maud Olofsson, Deputy Prime Minister and Minister for Enterprise and Energy, Sweden ;

- Tim Pawlenty, Governor of Minnesota and Chair of the National Governors Association;
- Reuben Jeffery III, Under Secretary for Economic, Energy and Agricultural Affairs, U.S. Department of State ; and
- Michael Liebrich, CEO, New Energy Finance Renewable Energy, United Kingdom.

Gregory Manuel opened the session by noting that renewables address mitigation, finance, and technology transfer – all three pillars of the Bali roadmap. He emphasized the need to connect renewable technologies and capital, both of which are available today.

Maud Olofsson underscored the importance of sustainability of biofuels. She cautioned about the food-vs-fuel conflict and unintended negative environmental impacts of producing biofuels. She outlined the role of Sweden's carbon tax and rebates for environmentally friendly fuels.

Tim Pawlenty highlighted the Governors' Association focus on energy conservation, renewable energies, greenhouse gas reductions, and sharing information.

Reuben Jeffery said we are witnessing a transfer of wealth of unprecedented proportions from oil consuming to oil producing nations. He emphasized the need for the EU, U.S. and Brazil to agree to common standards on biofuels, in order to create a global commodity, and underscored the importance of a clean technology fund committed by the U.S., UK, and Japan.

> "We are seeing a convergence of forces that tells me that our world is on a path to a cleaner, affordable, and more secure energy future, and renewable energy is at the center of it all."
>
> **- Samuel W. Bodman, Secretary, United States Department of Energy**

Michael Liebreich discussed the high growth rates for solar and wind power, and noted that such high growth rates cannot be maintained for long without facing problems. He forecasted the clean energy sector to stabilize at about US$650 billion per year by 2030.

CONCURRENT SESSIONS: MARKET ADOPTION OF NEW RENEWABLE ENERGY TECHNOLOGIES

This group of sessions addressed policies that have been successful in spurring the transition from lab to market and approaches that companies have taken to overcome the gap in capital availability between proof-of-concept and commercialization of renewable energy technologies. Panelists discussed financing barriers for commercializing new technologies, mechanisms for public-sector resources and policy to leverage private-sector resources, supply/distribution and demand infrastructure issues, ways to deal with risks associated with market introduction and growth, and socio-cultural issues/barriers for renewable technologies.

Grid-connected generation: Hans Jorgen Koch, Deputy State Secretary, Ministry of Climate and Energy, Denmark, and moderator of the session noted the success of his country's 20 percent share of wind power. He stated that, contrary to misconceptions that the grid cannot absorb large shares of intermittent resources such as wind, there had not been blackouts due to wind power. Dr. Christine Wörlen, German Energy Agency, compared the German feed-in tariff with the U.S. production tax credit (PTC) and noted the role of policy continuity (but flexibility) in sustaining Germany's exponential growth of wind power. She also noted a linear growth projection for wind power in the U.S. Midwest, and said feed-in tariffs alone are not sufficient to spur rapid deployment of wind power; they must be accompanied by other measures such as provisions on grid access, transmission planning, zoning laws, and balance of power. Terry Hudgens, President and CEO, PPM Energy, said commitment by government was crucial, and estimated that 119,000 U.S. jobs will be lost by 2009 if the PTC is not extended. Ian Simm, Chief Executive Officer, IMPAX Group, cautioned against implementing too many renewable energy policies at the same time, which he dubbed "spaghetti" policy. He noted the impacts of the credit and equity market crisis on the renewable sector, but said the sector remains sound for long-term investments. Finally, Lucien Bronicki, Ormat Technologies, described the benefits of geothermal power in providing base-load and weather-independent electricity. The panel also discussed issues relating to grid expansion, research and development, and the importance of avoiding not-in-my-backyard (NIMBY) policy.

Panelists in the session on market adoption and finance of grid-connected generation in emerging markets, moderated by David Bohigian, Assistant Secretary for Market Access and Compliance, U.S. Department of Commerce.

Distributed and Off-Grid Generation: Jeff Leonard, President and CEO of Global Environment Fund, and moderator of the session, noted that investing in renewable energy is a long-term venture, planning for R&D should look 20-50 years out, and funding – whether from government or private sources – must be increased massively to have a real impact. Daniel Yergin, Chairman, Cambridge Energy Research Associates, Inc. (CERA) predicted that the U.S. will have a carbon regime (cap and trade/carbon price) in place by 2009/2010, and that venture capitalists (vice governments) will be the primary funders of the scale-up of renewable energy. He emphasized the importance of opening up global trade in renewable energy technologies, products and services. This can be pursued by improving trade flows in environmental goods by reducing tariffs — whether through the World Trade Organization or through bilateral or regional free trade agreements. Linda Conlin, Vice Chair and First Vice President, U.S. Export-Import Bank, discussed various EXIM Bank programs available to U.S. companies to promote renewable energy. She said these programs help risky renewable-energy projects overcome the potential gap in capital availability between proof-of-concept and commercialization of new technology. Wu Guihui, Deputy Director General, Energy Bureau, National Development and Reform Commission, People's Republic of China, highlighted his country's goal of using renewable energy (especially methane, biomass and hydro) to power rural villages, and China's commitment to upgrade the central grid systems to extend and improve connectivity to rural areas. He also commented on the need to modify the central grid to better interface with local grids and new local power generators. He stated that China would like to curb the growth of coal consumption; introduce cleaner coal technology; increase domestic use of solar power; create 80 million micro-scale rural methane plants by 2020, and increase ethanol blending upwards from the current 10 percent by 2010. Gary Rieschel, Founder and Managing Director, Qiming Venture Partners, posed the provocative question: why do developing countries need a central grid system at all? Using the example of cell phone technology, Rieschel said that developing countries could skip development of expensive grid system by use of reliable lower-cost renewable energy available at massive scale. He calculated that is a US$20-40 billion a year gap in needed R&D investment and that governments must protect intellectual property rights to promote continued innovation. He claimed that fossil fuel monopoly is over, and argued that it is pointless to invest in new oil refinery capacity.

The panel also discussed ways to increase renewable energy technology transfer to less developed countries and simultaneously to protect intellectual property rights. Panelists urged the smallest developing nations to look up to approach multilateral development banks, UN Development Program, and bilateral aid donors for access to capital to finance rural off-grid renewable-energy projects. The panel noted that many Least Developed Countries are aware that they have a valuable commodity to sell – carbon credits – and are working through the UN Clean Development Mechanism to exchange these credits for cash.

Renewable Fuels: Dr. Paolo Frankl, Head of Renewable Energy Unit, International Energy Agency, moderated this session. Panelists addressed a range of issues, including the market difficulties facing corn-based ethanol; newly promising cellulosic technologies, particularly in sugarcane genetics; and the attractiveness of biodiesel for its ability to integrate into existing infrastructure. Panelists also noted the issue of "valley of death" in financing newly proven technologies, the importance of extending tax credits such as the biodiesel tax credit, and the need to resist the urge toward protectionism, which may give short term benefits, but lead to adoption of sub-optimal technologies.

Guatam Bhandari, Executive Director, Morgan Stanley, noted the problems of current market for ethanol production and distribution in light of sustained rises in corn prices, but emphasized the benefits of this in spurring investment into the most promising cellulosic biomass technologies. Kadri Nassiep, CEO, South African National Energy Research Institute, underscored the need for a decentralized approach to biofuels scale-up and deployment, noting that "local authorities play a key role, both through making land available" for production and through "supporting the market as a direct consumer." Fernando Reinach, General Partner, Votorantim Ventures, spoke on the recent advances in cellulosic ethanol in Brazil and of the vast untapped potential that remains. He compared sugarcane genetics to where corn was in 1850, and said it is already cost competitive with gasoline. John Plaza, President and Founder, Imperium Renewables, argued that biodiesel has a "leg up on ethanol in terms of readily integrating into traditional infrastructure," stipulating that quality, and in turn, distillation are the twin priorities that will motivate growth in biodiesel. Steve Gatto, Chairman, Chief Executive Officer, Bioenergy International, appreciated the arrival of the "tipping point of next industrial revolution," in the form of "bio-finance." He noted that accelerating the transition of new renewable technologies into commercial scale is challenging and appropriate, and timely policy support is critical to facilitate the transition.

Policies and Tools for Financing Renewable Energy in Mature Markets: This group of sessions discussed policies that would to enable the financing for mass deployment of renewable energy technologies in mature markets. This included strategies to overcome the hurdles when renewable energy cost of production is not competitive with conventional energy sources; strategies to address the gaps in capital availability (amount, timing, form, terms); strategies for identifying the sources of debt and equity capital; and policies concerning decentralized electricity supply, the diversity of electricity supply, and the maximum percentage of renewable electricity on the grid.

Grid Connected Generation in Mature Markets: Binyamin Ben-Eliezer, Israel's Minister of National Infrastructure and moderator of the session highlighted the role of renewable energies in energy security. He underscored Israel's leadership in solar energy and discussed plans for 225 megawatt of solar energy deployment in the Negev. He highlighted his country's commitment to become a renewables high-tech center, including a provision in the

U.S. Energy Independence and Security Act of 2007 mandating cooperation between the U.S. and Israel on renewable energy R&D. He also noted his country's commitment to renewable energy through a 10 percent renewable portfolio standard by 2020 and to energy efficiency by committing to a 20 percent improvement compared to business-as-usual by 2020. Christopher Eckerberg, Vice President and Head of Public Affairs, Vattenfall, did not expect consumer-led renewables transition, and called for public policies and incentives to facilitate the transition. Specifically, he favored feed-in tariffs, where the government decides the price per kilowatt from each energy source and the market determines the volume, as opposed to green certificates, where politician determine the volume of renewable energy to be deployed or purchased and the market determines the price. He also favored a cap-and-trade approach to climate change, which would promote energy efficiency as well as deployment of renewables. Pat Wood III, Principal, Wood3 Resources, and Past Chairman of Advisory Board, Airtricity North America, discussed the importance of being able to build new transmission lines and allocate transmission costs in order to develop large-scale renewables such as wind. The Public Utility Commission of Texas established Competitive Renewable Energy Zones, which enables transmission development to wind-rich resource areas of Texas before wind farms are developed. Robert Hertzberg, Principal, Renewable Capital, Chairman, G24 Innovations Ltd., and Former Speaker of the California House of Representatives, noted that in order to get good policy enacted and implemented it is important to take a bipartisan approach and talk about opportunities for jobs creation with renewable energy development.

Distributed and Off-Grid Generation in Mature Markets: Wolfgang Palz, Chair, World Council for Renewable Energy, and moderator of the session, set the stage by underscoring the importance of political support for renewable energy deployment in developed countries, and noted the strong growth of renewable energy in Europe. Thomas Dinwoodie, CEO, SunPower Corporation Systems, projected a 50 percent growth per year in the U.S. solar market through 2012. He predicted that by 2012, the price of solar energy will have decreased from the current US$0.15-0.35 per kilowatt to US$0.05-0.10 per kilowatt. He also mentioned the potential that wind, central photovoltaic, and energy efficiency have in meeting the U.S. electricity demand by 2050. He noted, however, that utilities will need more flexible forms of base load by 2015 and energy storage by 2030-2050. Mit Mehta, Principal, CCMP Capital Advisors, LLC, stated that sustained and visible policies and economic incentives are key for renewable energy growth and necessary to maintain current growth rates. Examples include feed-in tariffs, production payments, tax payments, local/renewable standards, megawatt targets, renewable energy certificates, and consumer rebates. Daniel Foley, Vice President, Power Marketing, Acciona Energy North America, noted that key potential areas of growth are geothermal, offshore wind, energy storage, and energy efficiency.

All panelists concurred that renewable energy has enormous market potential and underscored the critical role of long-term stable and transparent policy and economic

incentives to accelerate deployment of renewable energy. Panelists also recognized several challenges for renewable energies deployment. These include manufacturing at the volume and scale needed for market deployment; development of energy storage; bundling off-grid and distributed generation investments to create funding incentives; and U.S. subsidies for coal and biofuels. There was general agreement that extending incentives for renewable energy is in our interest, whether the goal is to decrease U.S. greenhouse gas emissions or to decrease U.S. dependence on fossil fuels. Examples of policy incentives include feed-in tariffs, production payments, and consumer rebates. Additionally, they recommended that policymakers work with funding institutions to address the concern that distributed and off-grid renewable energy generation projects may be small and thus may disincentivize financing. Projects could be bundled in a portfolio such that financiers feel secure in lending capital. Other programs that could act as incentives include customer choice programs, such as in California, as well as real-time metering so that consumers can track the amount of energy consumed. Moreover, it was noted that the off-grid sector can also provide employment opportunities as long as training programs are in place; technologies like solar do not require high levels of expertise to install and maintain.

Renewable Fuels in Mature Markets: Harry Duynhoven, Associate Minister of Energy and Minister of Transport Safety, New Zealand, moderated the session and noted New Zealand's strategy to become carbon neutral in the transport sector by 2040 and to use 90 percent renewable energy by 2025, among other targets. Paul Vikner, President and CEO, Mack Trucks, said every alternative fuel is not appropriate for every application, given barriers presented by truck technologies as well as fuels. He highlighted the importance of ensuring necessary infrastructure before mandating the use of certain fuels, encouraging R&D partnerships between government and industry, and adopting meaningful, targeted and temporary incentives for all renewable fuels stakeholders. Mark Fulton, Managing Director, Global Head of Strategic Planning and Climate Change Strategist, Deutsche Bank, said biofuels are coming under pressure in investment markets, while wind and solar are currently receiving high policy support and investor interest. He said that current uncertainties with respect to biofuels include carbon debt, whether incentives will disappear, and whether trade barriers will be an issue. Donald Paul, Vice President, Special Projects, Chevron Corporation, noted the importance of existing infrastructure, such as pipelines, in determining whether new development will take place. He also noted that technology, energy efficiency, and conventional, unconventional, and renewable fuels are all necessary. Mary Beth Stanek, Director of Environment, Energy, and Safety Policy, General Motors Corporation, stressed the importance of having consistent governmental policies. She noted that mandates will only work if there are policies in place to support them. She expressed concern about governments allocating resources only to R&D and not to the rest of the supply chain. She also stressed the importance of credible, peer-reviewed research.

During the discussion, panelists highlighted the importance of certification and global standards, including standardized products. Overall, there was an agreement that consistent

Paula Dobriansky, Under Secretary for Democracy and Global Affairs, U.S. Department of State

policies were needed to establish a new biofuel infrastructure. Panelists encouraged R&D partnerships between government and industry, and adoption of meaningful, targeted and temporary incentives for renewable fuels.

Policies and Tools for Financing Renewable Energy in Emerging Markets: This trio of sessions discussed incentives and policies to enable the financing necessary for mass deployment of renewable energy technologies in emerging markets in developing countries.

Grid-connected Generation in Emerging Markets: David Bohigian, Assistant Secretary for Market Access and Compliance, U.S. Department of Commerce, moderated the session. V. Subramanian, Secretary to the Government of India, Ministry of New and Renewable Energy, outlined the regulatory framework for renewables in India. He noted that too many regulatory commissions exist in India and it is critical to address this challenge to promote renewable energies. V.K. Garg, Chairman and Managing Director, Power Finance Corp, underscored grid connection problems in India and pointed out the need for support to move away from installed capacity to generation connected to the grid. He highlighted the importance of economic and technical viability in order to secure private sector's financing. Dana Younger, Senior Advisor for Renewable Energy and Sustainability, Infrastructure Department, International Finance Corporation, said that while renewables are maturing, there are still no low-cost technologies in developing countries. He underscored remarkable wind power growth in China and India, and discussed growth for different renewable technologies in other developing countries.

Jeffrey Sachs, Columbia University, identified three mega-trends that are at play in the energy sector: lack of pricing of carbon into energy choices; access to electricity in rural developing areas; and energy resource constraints by mid-century. He underscored that the climate agenda and the poverty agenda are intersecting as never before. He also stressed the role of Carbon Capture and Storage (CCS) in China and India in promoting renewable energy technologies.

Distributed and off-grid generation in Emerging Markets: The session was moderated by Mark Radka, Energy Program Coordinator, United Nations Environment Program (UNEP). Mohamed Berdi, Director of International Cooperation, Ministry of Energy, Mines, Water and Environment, Morocco, described his country's rural electrification effort that increased electricity access from 20 percent to 90 percent of the population in one decade. Morocco's success resulted from commitment to a long-term plan and a public-private partnership to implement it. Arnaldo Vieira de Carvalho, Sustainable Energy Specialist, Inter-American Development Bank (IADB), said that energy projects account for 15 percent of IADB's US$2 billion loan portfolio (i.e., US$300 million). Of the funding dedicated to energy projects 25 percent (US$75 million) is in renewable energy. IADB also established a US$40 million non-reimbursable fund to promote clean energy called the Sustainable Energy and Climate Change Initiative (SECCI). Christopher Flavin, President, Worldwatch Institute, called for a new paradigm for rural electrification as part of a robust rural development context rather than as a project to be funded by foreign donors. He also called for regional research and

Panelists in the session on market adoption and finance of distributed and off-grid generation in emerging markets, moderated by Mark Radka, Energy Program Coordinator, UNEP.

development centers focusing on policy frameworks and economic development approaches as well as technology. Anthony Orlando, President and CEO of Covanta Energy, said that size matters for plants generating power from waste. He saw opportunities for locating such plants near industrial parks and signing long-term power-purchase agreements. He highlighted that waste-to-energy facilities provide three streams of benefits simultaneously: reducing solid waste, providing electricity, and reducing global warming. Orlando noted that the combustion process releases CO2, which, although a greenhouse gas, is 20 times less potent than landfill methane that may be released if the waste were land-filled. Angelo Reyes, Secretary, Department of Energy, Republic of the Philippines, expected 100 percent electrification of rural villages in his country by 2009. The success is due to "cost of capital" subsidies provided by the government to 119 electrical co-ops, many of which are developing renewable energy (see http://www.doe.gov.ph/EP/ER_Strategies.htm). He noted the vast renewable resources that his country is already tapping into including solar, geothermal (second largest producer next to U.S.) and biomass (able to harvest three crops per year), and said that they were looking at ocean thermal as a new source of energy.

In sum, participants noted a wide range of issues including the need for: (1) robust and innovative public-private partnerships; (2) government leadership and strong policies; and (3) various technologies and their management and maintenance with local conditions. While further research and development on specific technologies was noted as important and ongoing, the more immediate concerns focused on enabling policy environments.

Renewable Fuels in Emerging Markets: Hernan Martinez Torres, Minister of Energy and Mines, Colombia, moderated the session. Dr. Yusof Basiron, CEO, Malaysian Palm Oil Council, discussed the Malaysian palm oil industry, and highlighted its benefits as a highly productive fuel that can reduce greenhouse gases compared to fossil fuels. He said that Malaysia is producing palm oil in a sustainable manner by taking precautions to ensure environmental protection. José Sergio Gabrielli de Azevedo, President and CEO, Petrobras, noted the importance of regulatory actions both in consuming and producing countries to increase biofuel consumption. These include mandatory blending requirements and mileage improvements mandates. Anil Cabraal, Lead Energy Specialist, World Bank, said the World Bank is just beginning to think about biofuels. He identified several tradeoffs in regard to the biofuels sector but stated that the World Bank has not yet developed a position on the issue. He said it is important to have certification and standards to ensure sustainability of biofuels and these should be developed on a multilateral basis. Glenn Prickett, Senior Vice President, Conservation International, highlighted environmental considerations in relation to biofuel production, including impacts on rural communities and ecosystem services, and emphasized the importance of establishing a global price for carbon. Overall, the session recognized the importance of biofuels in renewable energy portfolio and stressed the importance of sustainable production of biofuels and regulatory actions to increase biofuels consumption.

Panelists in the session on state and local authorities renewable energy policy and financing initiatives, co-chaired by Virginia Sonntag-O'Brien, Coordinator, UNEP Sustainable Energy Finance Initiative and Piyush Ranjan Rout, Executive Director of City Managers' Association Orissa, India.

Stephen Kabuye, Mayor of Entebbe, Uganda, in a panel discussion on economic development tools for state and local governments.

"[Uganda] needs over 20 times more power than is presently available in the short and medium term, this energy shortfall will partly have to be met from renewable energy sources."

-Stephen Kabuye, Mayor Entebbe Municipality, Uganda

THEMATIC REPORT
Report of the Sub-nationals Focal Point

The Sub-nationals Focal Point consisted of three sequential panel discussions. "Renewable Energy Policy & Financing Initiatives: Lessons Learned and Emerging Strategies"; "Economic Development and Renewable Energy"; and "Renewable Energy Collaboration Opportunities: Creating National and Sub-national Partnerships."

In each of the three sessions, panelists initiated a dialogue with the audience where they examined opportunities for and obstacles to a major and rapid scale-up in the global deployment of renewable energy technology at the sub-national level. The 19 individuals who served on the three panels represented ten different countries and included cabinet-level officials from national and state governments; mayors from cities large and small in the developed and developing world; CEOs and high-ranking executives from the private sector; and leaders of associations focused on generating support for renewable energy.

General Observations: Though each sub-national session had its distinct focus, a number of themes emerged that were common to all:

- The need for stable and predictable policies and regulations to create an environment where businesses and communities will be comfortable investing in and supporting these new technologies.
- The need to educate the public about renewable energy (RE) technologies and their costs and benefits.
- There is no one "right" answer. The right RE source and right policy mix to support deployment of that technology will depend on multiple factors including the geography/climate of the region in question, the demographics of the energy consumer base, and the resources at hand.
- The importance of bringing all stakeholders (federal and state/regional governments, the private sector and NGOs) to the table to discuss best ways forward and to give each stake-holder a role to play based on their strength/comparative advantage.
- Nurturing an attitude of "taking on risk" to bring these new technologies on line.

Renewable Energy Policy & Financing Initiatives: Lessons Learned and Emerging Strategies: Chaired by Ms. Virginia Sonntag-O'Brien, Coordinator of the United Nations Environment Program's Sustainable Energy Finance Initiative (SEFI), this session focused on state and local authority-driven initiatives to advance renewable energy markets and projects. Mr. Piyush Ranjan Rout, Executive Director, City Managers' Association, Orissa, India, discussed the local efforts and the importance of giving businesses and citizens incentives for using renewable energy (such as tax breaks) and building networks among colleagues for sharing best practices. Patrick J. D'Addario, President, Fiorello H. LaGuardia Foundation, USA, stated that technologies couldn't be transferred to developing countries

in a vacuum and then be expected to succeed. The people receiving the technology will need technical, financial, and organizational support to make use of and maintain the technology and infrastructure, and the technologies need to be integrated into an economically viable activity. Javier Garcia Monge, Energy and CDM Investment, Investment and Development Division, Corfo, Chile, said that in many instances local banks do not know the renewable energy market, so they assume a high rate of risk and ask for high warranties for Clean Development Mechanism (CDM) projects. Monge stressed the need to educate local banks and financial institutions about RE technologies to assist them in appropriately assigning rates of risk for project finance. Monge and colleagues held two conferences in Santiago to bring together project proposals and investors; this helped make local banks aware of opportunities in this area.

"Only through the provision of long term and stable policy environments will renewable energy thrive."

- Marianne Osterkorn, International Director, Renewable Energy and Energy Efficiency Partnership

Dr. Dieter Salomon, Lord Mayor of Freiburg, Germany, stated that Freiburg was one of the world's first cities to pursue a new energy supply concept, setting goals in 1986 to reduce CO2 emissions by 25 percent by 2010. They are working with their citizens to raise awareness, setting good examples themselves by pursuing energy efficiency for public buildings, heating new districts with biomass, and providing regulatory stability for energy providers. According to their Renewable Energy Act, individual power providers that put RE back into the grid are compensated by power companies at a favorable rate. All consumers are required to pay 3-4 Euro/month to support renewable energy whether they use it or not. This policy, according to Salomon, marked the beginning of a boom, for solar, wind, and biomass-based energy providers in Germany. Salomon stressed that private investors are eager to invest in RE, but that we need to enact good legislation that provides policy security for the next 20 years of investment. Mark Sinclair, Director, Clean Energy States Alliance, USA stated that, in the U.S., states and local governments are driving energy progress, and that policy development is as much about economic development as environmental protection. Based on the successes of some of the states in his alliance, Sinclair made the following points and suggestions:

- Clean Energy Funds and Renewable Energy have high upfront costs. Some states have helped consumers cover the increases in their bills brought on by increasing their reliance on RE (solar, wind, biomass, fuel cells, etc...).
- Some states have required that utilities must provide a certain percentage of their energy from Renewable Energy sources.
- Some states invest a portion of their public pension dollars into RE technologies.
- Instead of funding specific projects, federal governments should consider providing block grants to state and local governments to determine what they best need and to make the appropriate Renewable Energy choice as appropriate to local conditions.

- The federal government finances R&D only, but we need massive RE deployment. Federal governments should pursue actions to help States deploy RE and build markets.

Mayor George Fitch of Warrenton, Virginia, stressed that local governments themselves could take action without necessarily waiting on support from federal and state governments. As an example, he described what Warrenton, Virginia, had done to make itself less reliant on foreign oil and fossil fuels. Warrenton has produced a small-scale biorefinery at the site of its local landfill which it is using to convert locally produced refuse into electricity and fuel to provide green power to its community and to reduce its GHG emissions by 100,000 tons. Mayor Fitch testified that the biggest obstacle was convincing local government officials to "try something new," and stated that for his leadership in this area, he had received more appreciative comments and voices of support from his constituents than for anything else he had done (including reducing their taxes).

Economic Development & Renewable Energy: The purpose of this session was to explore various economic development tools state and local governments can employ to support key technology companies; further commercialization of cutting-edge, employment-generating renewable technologies; and the development of successful local and international markets for them. Panel Moderator, Katie McGinty, Secretary, State of Pennsylvania, noted that though the state is known for coal and oil, Pennsylvania is strategically promoting a long-term renewable-energy policy focused on attracting private investment from global renewable energy companies to create jobs and promote economic growth, as well as to grow the sector and state's use of renewable energy. Paul Tonko, President of NYSERDA, State of New York, Innovative Business Development, highlighted "the clean energy innovation economy" to further commercialize green energy, accelerate research and development, attract new clean-energy businesses and investment, stimulate market penetration, create green energy jobs, and increase New York's renewable energy consumption, as well as discussed the state's efforts to promote energy efficiency.

Marta Bonifert, the Executive Director of the Regional Environmental Center (REC) for Central and Eastern Europe of Budapest, Hungary, highlighted President Bush's financial support to create the REC to facilitate environmental democracy and sustainable development in Eastern Europe; a "think – and do – tank" supporting over 3,500 projects, of which energy and climate change are priorities through support for education and communication, policy development, legislation, transparency, and growing renewable energy markets. Tom Delay, the Chief Executive of the UK Carbon Trust in London, discussed the organization's focus on the transition to a low-carbon economy by working with industry to increase private investment to scale-up deployment of renewable energy and work with governments for policy that supports research and development to develop new technologies and that facilitates deployment through effective planning to integrate renewable power into the electricity grid and reducing the cost to consumers. Stephen Kabuye, Mayor of Entebbe, Uganda, stressed that energy is fundamental to the economic and sustainable development and though he

understands the benefits of renewable energy, the high cost impedes greater use in Uganda. He noted that, as an indicator of poverty, wood and biomass make up most of Uganda's energy supply, which has negative environmental impacts due to deforestation. Kaspars Gerhards, Latvia's Minister of Economics, summarized efforts to introduce renewable energy in the country's electricity supply in response to higher oil prices and address climate change and in accordance with EU energy policy commitments.

In the ensuing discussion, participants' comments included challenges to finding property to develop RE projects, as well as the intersection of federal energy policy with state and local efforts. This is particularly important when governments are part of multi-government groups, such as the European Union. Speakers also described efforts to train the workforce and inspire careers in energy to promote innovation. Panelists underscored the need for stable, clear, and predictable policies to provide private investors security for their investments, finance research and development for new technologies, support micro finance to increase access in rural areas, remove barriers to trade and deployment, and help drive down the cost to consumers. Speakers recommended that leaders link policies to job creation by negotiating with renewable energy companies to invest capital in the state and create jobs, and integrate renewable energy policy to other policy objectives such as environmental protection, and economic growth. Several participants noted the challenge of finding land to develop projects, which impedes investment.

Renewable Energy Collaboration Opportunities: Creating National and Sub-national Partnerships: Paul Suding, Head of Secretariat, Renewable Energy Policy Network for the 21st Century (REN21), welcomed attendees and noted that the focus of the session would be on cooperation between national and sub-national governments and include cross border cooperation as well. Marianne Osterkorn, International Director, Renewable Energy and Energy Efficiency Partnership (REEEP), explained the role of her organization as a change agent on energy policy and financial mechanisms, including in China and Uganda. She noted that national governments are often resource-constrained – energy policy is driven by specific regional or national interests, and cooperation between national and sub-national levels must be enhanced. Small renewable energy projects have trouble attracting financing and national and regional governments can play a role in adopting policies that encourage investments, such as through special economic zones. Dr. Kijune Kim, Chair of the Asia Pacific Partnership for Clean Development and Climate, Renewable Energy Distributed Generation Task Force, South Korea described the Government of Korea's experience encouraging the adoption of new and renewable energy through the setting of a national goal to increase the percentage of new and renewable energy in overall energy use from about 2 percent to 5 percent by 2011 and 9 percent by 2030. Central governments have a key role to play in encouraging the adoption of new and renewable energy on the sub-national level. In the case of Korea, the Central government provides subsidies through the

"Local Deployment Subsidy Program," training programs, infrastructure and other assistance mechanisms.

Ms. Gunnhild Utkvitne, Director, Baltic Sea Solutions, highlighted the success experienced by the small Danish island of Aland, which contains between 400 and 600 windmills and could export 50 percent of the power it produces, in adopting new and renewable energy. She noted that islanders are not taking action just to be green, but because these actions constitute a sound business strategy. She emphasized the need for national governments to partner with local governments, because they work closely with the private sector, universities and other stakeholders and link to national policies and Kyoto. She stressed that it takes political courage on the local level to "make things happen" and that attracting new businesses and technologies involves planning and environmental impact assessments. Brian McLean, Director of the Office of Atmospheric Programs, U.S. Environmental Protection Agency, noted the EPA's strong track record of working at the state and local level on developing voluntary programs to adopt new and renewable energy. He highlighted several EPA programs, including Energy Star, the Voluntary Green Power Partnership, Methane to Markets, and the Partnership for Clean Indoor Air and praised Intel for buying a record amount of green power and Pepsi for encouraging companies in its supply chain to do the same. He stressed the importance of expanding green energy throughout the supply chain to maximize its impact and noted how voluntary programs have encouraged the adoption of green energy at the State and Federal levels in the U.S.

Marty Sedler, Global Utilities Director, Intel Corporation Development said that partnerships between the public and private sectors are key and noted the extensive actions undertaken by Intel to adopt and advance green energy policies, including becoming the largest purchaser of green energy in the U.S. He noted that the adoption of green energy makes good business sense, but pointed out the difficulty that companies face in working with state and local governments, which often have a tangle of competing and confusing laws and regulations. He stressed that finding a credible partner is essential, voluntary programs work best because regulations often require varying implementation periods and requirements, and that subsidies should include incentives for conservation. He emphasized that voluntary partnerships let companies customize their programs and take credit for their actions and warned that mandatory programs may lead to such unintended consequences as utility rate increases and excessive profit taking. In the ensuing discussion, participants discussed the benefits to companies of embracing new and renewable technologies, national and local level cooperation, and how best to achieve buy-in through voluntary approaches. Panelists discussed the need for federal, state and local levels to work closely together and with other stakeholders, such as the private sector, to adopt new and renewable energy. Panelists provided examples of actions by the national level to encourage adoption of green energy at the sub-national level, a bottom up approach whereby local communities press for green energy as a sound business investment, and the appropriateness of both voluntary and mandatory approaches.

U.S. President George W. Bush visits the Trade Show at WIREC

PARALLEL EVENTS

Trade Show: Exhibition and Global Business Conference

In parallel with the WIREC ministerial conference, the American Council On Renewable Energy (ACORE) organized a co-located Trade Show comprised of an Exhibition and a Global Business Conference. The Trade Show at WIREC drew nearly 6,000 attendees, making it the largest all-renewable- energies business-to-business and business-to-government conference and exposition ever held in the U.S. The Trade Show was global in scope, hosting exhibitors, speakers and participants from more than 70 countries around the world.

EXHIBITION

ACORE developed the Trade Show Exhibition with logistical advice from the American Wind Energy Association. The Exhibition featured 246 renewable energy technology suppliers, systems integrators, financiers, professional services firms, end-users, utility companies, energy companies, educational institutions, non-profit organizations, associations, government agencies, foreign governments and economic missions, and other exhibitors. Eleven foreign countries which are leaders in the renewable energy field had national pavilions, including Canada, China, Denmark, Germany, Greece, Italy, Japan, Korea, Norway, Spain, and Sweden. The highlights of the Exhibition and information about exhibitors can be found at www.acore.org.

ACORE President Michael Eckhart led President Bush on a tour of the Trade Show Exhibition during his visit. They stopped to see a converted plug-in hybrid electric vehicle that will get 100 miles per gallon of gasoline and can be charged through a normal 120 watt outlet. This conversion, which was performed by Boston-based A123 Systems, exemplified the kind of technological advances and commercial ingenuity that were on display at the Trade Show. President Bush also visited Volvo's exhibit, which included eight large trucks, seven of which could run on seven different kinds of biofuels, and one of which was a hybrid dump truck.

Exhibition at WIREC

GLOBAL BUSINESS CONFERENCE

The business conference was developed by a joint venture of ACORE and the following Partnering Trade Associations:

- American Coalition for Ethanol
- American Wind Energy Association
- Clean Fuels Development Coalition
- European Renewable Energy Council
- Geothermal Energy Association
- Global Wind Energy Council
- National Biodiesel Board Association
- National Ethanol Vehicle Coalition
- National Hydropower Association
- National Hydrogen Association
- Renewable Fuels Association
- Solar Electric Power Association
- Solar Energy Industries Association
- U.S. Combined Heat & Power Association
- Chinese Renewable Energy Industries

Each association took responsibility for planning the panels and inviting speakers for the Global Business Conference while ACORE served as the central coordinating body. More information about the Trade Show can be found at ACORE's website: www.acore.org.

The Opening Plenary of the Global Business Conference was chaired by Vivienne Cox, Chief Executive Officer of BP Alternative Energy, along with ACORE President Michael Eckhart and ACORE Co-Chairman John Geesman. The Plenary included keynote speeches by Vic Abate, Vice President for Renewable Energy, General Electric Company; Jan-Eric Sundgren, Senior Vice President Environment and Public Affairs, Volvo; Joe Stanislaw, Chairman and founder, Cambridge Energy Research Associates; and Dan Arvizu, Director, National Renewable Energy Laboratory.

A highlight of the Opening Plenary was the announcement by Lee Stein, founder of Prize Capital, of a new "Biofuels Prize". The multi-million dollar prize is intended to accelerate development of breakthrough technologies for sustainable, small-scale decentralized biofuel production systems for liquid transport fuel. Prize rules will produce a winning technology that is efficient, sustainable and compatible with today's infrastructure

The 235 Global Business Conference speakers included leaders from around the world in the private sector, government, academia, and civil society. They spoke at 36 sessions over the course of two days, each 90 minutes in duration, which focused on 6 renewable technologies:

Wind Power

- Solar Energy
- Geothermal Energy
- Hydropower and Ocean Energy
- Biomass Power and Waste-to-Energy
- Biofuels

The speakers' presentations can be found at www.acore.org.

The Global Business Conference focused on four major themes:

- Status of Technology
- U.S. Markets and Drivers
- Global Markets and Drivers
- Finance

In addition to these themes, the Business Conference included six Cross-Cutting sessions addressing inter-disciplinary topics such as the "Impact of Renewable Energy Credits & Carbon Credits on Financing the New Economy" and "Grid Integration."

The Global Business Conference speakers addressed broad and difficult questions. Some of these are listed below with a sampling of related comments made by the speakers.

Michael Eckhart, President, ACORE addressing the plenary session of the Global Business Conference

1. What technological systems and equipment are available today, and what can be used for commercial projects?

- Nicola Romeo, of the University of Parma, Italy, noted that technologies are quickly moving from the lab to the marketplace, and they are becoming increasingly sophisticated.
- Kazuhiko Hayashi, of Electric Power & Energy Research Laboratories, Sumitomo Electric, highlighted a project in Albany, New York which involves the creation of the world's first in-grid underground HTS cable. This will deliver significantly more power than conventional cables, helping to reduce grid congestion as well as installation and operating costs.
- Larry Kazmerski, of the National Center for Photovoltaics, remarked that 2nd, 3rd, and 4th generation technologies are developed much more quickly than 1st generation technologies.

2. What are the economics of renewable energy options now, and what will be available in the near future?

- Michael Ware, of Good Energies, opined that driving down cost is the biggest economic challenge and increasing production is necessary to benefit from economies of scale. Technologies such as solar photovoltaic panels are expensive to produce, but if it is possible to scale-up, the cost can come down and the technology can become economically feasible.
- Ware also warned that the near-term market is volatile because investors are anxious about the following: recent economic weakening and financial turbulence; fears about the future profitability of the industry; expectations of margin erosion; an expected consolidation wave in the industry; uncertainty about subsidies and policies; concerns about the prevailing business model going forward; concerns about cost and raw material supply; and investor rotations, entries and exits. This may lead to slower market growth in the near-term.

3. What is the status and outlook on renewable energy investment and finance, national and global market demand, industry development, and competition?

- Renewable energy is progressing much more quickly in some places, due to many factors, including market demand, trade, investment, policy, and technology. Janet Gail Besser, of National Grid, stated that transmission investment is a major obstacle to renewable energy growth. This comment is indicative of the numerous factors that are involved in the growth of renewable energy.
- An example of an advanced renewable market is France, which has set a goal of pricing solar electricity competitively with other electricity sources by 2015.

4. What state policies affect the renewable energy field?

- Li Junfeng, of the Chinese Renewable Energy Industry Association, discussed the impact that public investment in research and development, favorable tax structures, grid planning coordination have on the advancement of renewable energy technologies and markets.
- Adrian Katzew, of Santander, compared and contrasted the fiscal policies in several European countries in order to demonstrate the impact that policies have on investment and, consequently, the renewable energy field.

5. What new technologies are on the horizon?

- Larry Kasmerski and Nicola Romeo spoke about breakthrough 4th generation photovoltaics, and specifically about thin film solar cells.
- In the field of geothermal energy, Jefferson Tester, of Massachusetts Institute of Technology, predicted that existing hydrothermal systems would be overtaken by the more advanced Enhanced Geothermal Systems (EGS), which have a much greater energy production potential.
- Ed Lowe, of GE Energy, observed that no single renewable technology will be the silver bullet to the world's energy needs. Multiple kinds of renewable energy are needed because of growing market demands, varying geographies, and diverse populations which need energy.

"GREENING" OF THE TRADE SHOW AT WIREC 2008

The planners of the WIREC Trade Show paid close attention to sustainable conference practices. The Washington Convention Center was chosen as the venue partly because it makes recycling a priority and is the most energy efficient building of its size on the East Coast of the United States. Other efforts taken to make the event "green" and mitigate the event's impact on the environment included: recycling the large vinyl signs made for the conference, printing the Official Show Guide on recycled paper with soy ink, and selecting volunteers' shirts made of 100 percent organic cotton.

To offset the carbon footprint of their travel to the Trade Show, 285 attendees made generous contributions to a coalition of Planet 2025 and Trees for the Future. The funds will be used to plant 70,700 trees, which will remove an average of 3.5 million pounds of CO2 from the atmosphere per year, offsetting 3,500 one-thousand mile trips by car or 2,150 kilowatt hours of electricity.

Sterling Planet, Inc. awarded WIREC a "Certificate of Carbon Neutrality." Thanks to Sterling Planet's sponsorship, the conference's carbon footprint was offset by investment in renewable energy and carbon sequestration projects around the world.

ACORE MEMBER DAY

To celebrate the launch of the largest all-renewables conference in the U.S., ACORE invited all of its members attending WIREC to participate in ACORE Member Day on Monday, March 3rd. The event included a welcome luncheon, happy hour, and meetings of four ACORE committees: the Biomass Coordinating Council (BCC), the Higher Education Committee; the Communications Committee, and the Utility Committee.

TRADE SHOW OUTCOMES

Everyone involved in the Trade Show came away with more knowledge about the role of renewable energy in the world today and its possibilities in the future. The organization of the business conference and exhibition helped participants develop a more well-rounded understanding of renewable energy. For example, the technology displays helped to educate attendees about the science behind renewable energy, which was especially important for those who work at the policy level. Similarly, the finance and policy sessions educated engineers and venture capitalists about the direction of markets and regulations.

One of the major outcomes of the conference was the building and strengthening of relationships. Seventy percent of attendees who were surveyed indicated that networking was their principal reason for attending. For renewable energy to reach its fullest potential, cooperation between governments, the private sector, and nongovernmental organizations will be essential. The convening of diverse members of the renewable energy community at events like the Trade Show, and continued communication after the event, will cultivate new ideas, cooperation, and collaboration.

The positive energy that existed at the Trade Show at WIREC 2008 will influence the growth of the field in coming years.

U.S. President George W. Bush visits the GE exhibit at the Trade Show

OFFICIAL SIDE EVENTS

The purpose of the WIREC Official Side Events (OSE) and Official Side Event Workshops (OSEW) was to enhance participant's capacity and knowledge across WIREC's thematic areas. More than 70 Official Side Events and Official Side Event Workshops were hosted during WIREC, representing non-governmental, governmental, and inter-governmental organizations from Africa, North America, Latin America and the Caribbean, Asia and the Pacific, and Europe.

WIREC OSE and OSEW offered a unique chance for the world community to discuss the opportunities and challenges of a major, rapid, global scale-up of renewable energy and advance the goals of energy security, climate change mitigation, and sustainable development.

These Official Side Events were administered by the firm Energy and Security Group, working closely with ACORE and the Department of State. More details on OSEs can be found at www.acore.org.

Event: Biomass Heating Fuels: Low Hanging Fruit for Carbon Emissions and Energy Independence

Organized by: The Pellet Fuels Institute,

Description: This event focused on heating as a substantial use of energy in the U.S. and how heating with biofuels is an effective and practical means of energy use.

Event: REES Investment Opportunities in Tuscany

Organized by: LaGuardia Foundation with Invest in Tuscany; Tuscany Regional Agency for Investments Promotion

Description: The event overviewed Italian market incentives, as well as Tuscan regional incentives for REES investment. Invest in Tuscany is an initiative of the regional Agency for Investments Promotion and is geared to marketing the opportunities to launch entrepreneurial activities in key Sectors among which Renewable Energy and Energy Efficiency.

Event: Tools for Integrated National and State Energy Policy Planning: Threshold 21

Organized by: Millennium Institute with SolarQuest; Baltic Sea Solutions (BASS)

Description: The Millennium Institute presented the results of the simulation of Threshold 21 (T21), a model that provides a transparent and comprehensive means to assess the broader benefits and impacts of the various options in a non-partisan manner, for the economy, society and the environment.

Event: Methane to Markets Partnership: International Opportunities in Renewable Energy Projects in Landfills and Manure Waste Management
Organized by: Methane to Markets Partnership Secretariat with EPA Landfill Methane Outreach Program; EPA's AgSTAR Program; ERG Consulting

Description: The event provided a brief overview of the Methane to Markets Partnership along with information about opportunities for landfill gas projects and manure waste management projects in M2M Partner countries internationally.

Event: Emerging Investment Opportunities in the U.S. Wind, Solar and Biofuels Industries
Organized by: Stoel Rives LLP

Description: The event focused on new investment opportunities in biofuels, wind and solar energy in the United States with an emphasis on educating European companies seeking to purchase companies or develop projects in the United States.

Event: Climate Prosperity and Renewable Energy
Organized by: Global Urban Development with Rockefeller Brothers Fund

Description: This event explained the purpose of the newly created Climate Prosperity Project, which is designed to demonstrate in ideas and action that promoting renewable energy and reducing greenhouse gas emissions generates substantial "green savings, green jobs, and green profits.

Event: Jobs in Renewable Energy: Got Want One? Want One?
Organized by: Energy Action Coalition with American Council On Renewable Energy (ACORE)

Description: The event constituted of two parts: the first was an introduction and overview of the current renewable energy market by the Global Institute of Sustainability and the Energy Action Coalition. The second section of the event featured a moderated roving microphone, in which all of the participants were given 90 seconds to introduce themselves, their interests, and solicit the group for help with career questions.

Event: Legal Considerations and Strategies for Cleantech Start-ups
Organized by: MATIC-Moroccan American Trade and Investment Center with Economic Section of the Embassy of the Kingdom of Morocco

Description: Lacking hydrocarbon resources, Morocco has embarked on a wide ranging investment program in alternative energies, and has initiated wind and solar projects. This event provided an overview of the energy sector, the strategic plan guiding energy growth in the coming decades, and specific projects available to international partners.

Event: GW-scale Transmission and Annual-scale Firming Storage Alternatives for Diverse, Stranded, Renewables: Electricity, Hydrogen, Ammonia, and Others

Organized by: The Leighty Foundation with EPRI; Union of Concerned Scientists; Xcel Energy; Electricity Storage Association; National Hydrogen Association; Environmental Law and Policy Center; Stanford Atmospheric / Energy Engineering program; NaturalHY Project; Ammonia Fuel Network; Iowa Renewable Energy Association; Iowa Farmers Union; Ammonia Fuel Network; University of Minnesota - Morris, Hydrogen Discoveries, Inc.

Description: This side event included presentations covering promising alternatives for transmission and annual-scale firming storage for diverse, large-scale, stranded, renewable energy resources.

Event: Danish Ministerial Side Event on Renewable Energy Technology Deployment

Organized by: The Danish Ministry of Climate and Energy and the Royal Danish Embassy with Danish Minister for Climate Connie Hedegaard; IEA Renewable Energy Technology Deployment Implementing Agreement (RETD); REN21

Description: The side event focused on issues relevant for renewable energy deployment including: Establishing recognition of the potential for RE technologies as near-market mature and competitive technologies in order to meet global challenges of climate change, and security of energy supply. A call for global energy forecasts and scenarios to reflect globally prioritized needs and priorities in order to guide the development of energy policy and investment decisions; The urgent need for political leadership and international cooperation to ensure the framework for the deployment of RE technologies on markets with focus on the electricity and heating/cooling markets; Establishing transparency of the real costs and benefits of all energy technologies, including renewable, fossil fuel and nuclear technologies.

Event: The German success story of renewable electricity development: preconditions and future challenges

Organized by: German Renewable Energy Federation (BEE) with German Wind Energy Association (BWE); German Solar Industry Association (BSW)

Description: The event started with a presentation of 2007 figures on RES development in Germany. The main drivers for different growth rates of different technologies and different sectors of RES in Germany were described and analyzed.

Event: The Economic Impact of Renewable Energy

Organized by: ACORE and Rockefeller Brothers Fund

Description: The event consisted of a roundtable discussion on past and emerging efforts to track and measure the economic, tax and fiscal effects of renewable energy fuels and electricity, and renewable energy policy, both in the United States and abroad, featuring leading economists and analysts in this space.

Event: Bioenergy & Communications: The Future of Advanced Biofuels: Clarifying the Message

Organized by: National Wildlife Federation; BIOenergy BlogRing; ACORE/Biomass Coordinating Council; Price BIOstock Services

Description: A panel of four experts led a discussion of how to communicate with lay audiences, and how to distinguish between the potential for next generation biofuels and the controversies over current production methods.

Event: The Global Status of Renewable Energy: 2007

Organized by: REN21 with Worldwatch Institute

Description: At this side event REN21, the Worldwatch Institute and some of the report's key partners provided an assessment of the global status of renewable energy. Experts also presented regional and national updates on renewable energy technologies, markets, and policies.

Event: Accelerating the Deployment of Renewable Energy Technologies: Regional Report from the Renewable Energy and Energy Efficiency Partnership (REEEP) and U.S. Department of State

Organized by: Renewable Energy and Energy Efficiency Partnership (REEEP) with American Council for Renewable Energy (ACORE); Alliance to Save Energy (ASE); US Department of State; Environment Canada

Description: This event featured the outputs of the REEEP regional meetings/consultations and provided a clear assessment of the status and opportunities for renewable energy systems, and direct suggestions on how national governments and the international framework can help to accelerate the deployment of renewable energy systems within their regions.

Event: Renewable Fuels for CO2-Neutral Road Transport

Organized by: Volvo Group with Department of Energy

Description: This event described Volvo's willingness and ability to develop engines designed to use renewable fuels.

Event: Industry Perspectives on How the Carbon Market Can Promote Deployment of Clean Energy Technologies

Organized by: Business Council for Sustainable Energy

Description: This event considered issues such as the role of clean energy technologies as solutions to energy, environmental and security challenges. Speakers offered expert insight on solar, wind, biogas, hydro, geothermal and carbon market and project finance for clean energy technologies.

Event: Creating an Enabled NY for Clean Tech Innovation
Organized by: NY Loves Clean Tech c/o CEG with National Grid and Syracuse Center of Excellence in Environmental and Energy Systems

Description: This event showcased NY's ability to lead and innovate in clean tech and renewable initiatives including creating workforce development programs designed to address the staffing needs of the clean tech industries, funding and supporting world class R&D initiatives and facilities designed to provide leading edge resources for today and tomorrow's brightest minds.

Event: Renewable Energy Policy in Europe - 20 percent by 2020
Organized by: European Renewable Energy Council (EREC) with European Commission; REN21

Description: This side event highlighted the agreement Europe's Heads of States have reached to a binding 20 percent renewable energy target for Europe to be reached by 2020.

Event: Clean Cities and Energy Independence
Organized by: over 90 local coalition of the U.S. Department of Energy Clean Cities program

Description: This event gave the various stakeholders of the WIREC the opportunity to learn more about Clean Cities and current project going on throughout the nation.

Event: U.S. - Brazil Biofuels Cooperation: One year later
Organized by: UNICA with Brazil Institute of the Woodrow Wilson Center

Description: This event constituted a roundtable discussion where speakers reviewed progress made under the Memorandum of Understanding (MoU) signed between Brazil and the United States March 9, 2007 to deepen their joint efforts to develop of reliable, clean, and sustainable energy sources. The speakers reviewed progress made under the MoU and outline efforts that should be undertaken in the near future to expand global use of biofuels.

Event: The Role of Waste in the Future of Renewable Energy
Organized by: Covanta Energy

Description: This panel examined the current state, latest trends and future potential for waste streams as a source of renewable energy and shared their insights on the latest technology developments, political challenges, and regulatory developments. Issues explored are an examination of the carbon loading implications for different waste streams, the role of recycling in energy recovery, new technologies being developed, and a look at what other leading countries are doing on waste management and how it related to carbon loading and renewable energy generation.

Event: Cool Cars, Green Grid: Plugging Vehicles into Renewable Electricity to Reduce Oil Dependence and Climate Change

Organized by: 2020 Vision Education Fund with Google.org

Description: This event discussed the potential for plug-in electric vehicles (PEVs) technology, when can PEVs be expected on the market, what challenges lie ahead, and what needs to be done on the federal level to bring this promising technology to consumers. This will open the new frontier of getting transportation on the power grid, and a new opportunity for renewable energy to play a major role in reducing oil use and carbon pollution.

Event: Renewables Are Good Business

Organized by: Deutsche Energie-Agentur GmbH (dena); the German Energy Agency German Federal Ministry of Environment (tbc); German Ministry of Industry and Technology

Description: This side event illustrated the success story of renewable energy business from the viewpoint of governments and industry and presented how renewable energy can impact economic growth, technology development and the job market in a major fashion.

Event: Community Support Driving RE

Organized by: International Renewable Energy Alliance (IREA) with World Wind Energy Association (WWEA); International Hydropower Association (IHA); International Geothermal Association (IGA); International Solar Energy Society (ISES)

Description: This side-event constituted a panel discussion facilitated by Chair of IREA with panelists from each IREA member organization (IGA, IHA, ISES, WWEA) and discussed community strategies and bottom-up approaches as drivers of renewable energy policies and policy change. The following issues were discussed: Best practice examples of successful community strategies and involvements and lessons to be learnt; Role different renewable energies play in development of global energy policies and supply; Added value of local and state level legislation and action in the development of renewable energy policies on a broader level; Role of IREA organizations – members that IREA represents.

Event: Accelerating the Deployment of Renewable Energy: How Feed-In Tariffs can be applied in North America

Organized by: World Future Council

Description: This side event focused on the possibilities of North American States adopting a Feed-in Tariffs policy employed by over 40 countries. They have proved to be the most successful and effective policy instrument to ensure a rapid, low-cost and massive deployment of Renewable Energy.

Event: Government Procurement of Renewable Energy
Organized by: U.S. Department of Energy

Description: The event highlighted how governments have both a tremendous opportunity and a clear responsibility to lead by example with renewable energy deployment. By focusing government investment on the use of renewable energy resources, the public sector can create a sustained, market-driven shift toward renewable energy. The government sector's buying power and standard buying practices can generate broader demand, creating the framework for standardized and competitive solicitations in the renewable industry. This successful approach to designing, implementing, and managing Federal requirements to purchase renewable energy was discussed, along with case studies from other governments that have achieved similar successes.

Event: Future of Renewables
Organized by: Energy Globe Foundation with Fronius International; SOLution Solartechnik

Description: The event consisted of the presentation of the Energy Globe Award and the Energy Globe award Portal.

Event: An Overview of Canada's Renewable Energy Industry
Organized by: Government of Canada with Natural Resources Canada & The Consulate General of Canada in Detroit

Description: The event featured a panel of three speakers: one giving an overview of the renewable energy sector in Canada, including Government support programs and renewable energy targets, a second speaker talking about the investment climate in Canada and a third being a successful American investor giving a testimonial.

Event: Renewable Energy Resources, Potential, Legislation, and Investment in Turkey
Organized by: Electrical power resources survey (EE)

Description: The event consisted of presentations on Renewable Energy Resources (Hyro, Wind, Geothermal, Solar, Bioenergy); Potential, Legislation, Investment Opportunity in Turkey.

Event: Prize Capital Biofuels Prize
Organized by: Prize Capital with X PRIZE Foundation; IFC; the GEF

Description: Prize Capital launched an amazing new mechanism for generating financing for renewable energy. At the launch Prize Capitalism unveiled the first of its Earth 2.0 programs, the Biofuels Prize for sustainable decentralized renewable energy, and invited WIREC experts to join its panel of advisors. Prize Capital's new financing mechanism combines inducement prize competitions with companion investment funds to deliver capital to innovators to achieve technological breakthroughs.

Event: A Clean Energy and Climate Change Roadmap for the Next President of the United States

Organized by: The Presidential Climate Action Project with Christensen Global Strategies, LLC

Description: This panel outlined the challenges and opportunities likely to face the next President of the United States, particularly how to create the market signals investors and companies are looking for to continue to grow renewable energy industry opportunities in the U.S. and globally.

Event: Sustainable Technologies to Enhance Biomass Production: New Tools in the Toolbox

Organized by: Remineralize the Earth: Towards a Sustainable Agriculture, Forestry and Climate; Renew the Earth; International Biochar Initiative (IBI); Biomass Coordinating Council (BCC) with RPM Ecosystems; Biocycle

Description: This side event focused on specific individual and integrated ways to enhance soil fertility, decrease costly annual inputs on agricultural soils, increase productivity per acre, decrease time to harvest, and increase biological carbon sequestration, while adding numerous societal and environmental benefits.

Event: Thinking Outside the Box: The Nevada Reforestation and Bioenergy Project

Organized by: RPM Ecosystems; Renew The Earth (RTE); Nevada Department of Corrections

Description: The event dealt with the Nevada Reforestation project which is an innovative and unique collaboration between Renew the Earth (RTE), a non-profit organization that advocates policies, practices, and investments for increasing energy and environmental sustainability in the United States and globally, the State of Nevada prison system, and the Nevada Division of Forestry.

Event: Biogas for Better Life: An Africa Initiative

Organized by: Winrock International with Netherlands Ministry of Foreign Affairs

Description: The event provided information about the Biogas Africa Initiative, with programs already launched in Rwanda and Ethiopia and many more under development. The panel explained the basics of why biogas; talked about the successful programs in Asia upon which this is based; explained the elements of the national program design that result in this being a market-driven program; and explained the objectives of the Initiative.

Event: Will Bio-Science change the future of energy?
Organized by: BP

Description: In this lunchtime address and discussion, EBI Director Dr. Chris Somerville who leads a team of top researchers affiliated with the EBI, a collaboration between BP, the University of California, Berkeley, the Lawrence Berkeley National Laboratory, and the University of Illinois at Urbana-Champaign described the work of the Institute and the ground-breaking research aimed at the production of new and cleaner energy, initially focusing on renewable biofuels for road transport. Vivienne Cox, Chief Executive of BP Alternative Energy, provided opening remarks and introduction.

Event: Solar cooking: Renewable energy at home for a greener, healthier and wealthier world
Organized by: Solar Household Energy Inc.; Sun BD Corporation; Sun Ovens International, Inc., Solar Oven Society

Description: In this session, a who's who from the nonprofit and for-profit worlds briefed attendees on the state of the art in solar cooking technology transfer, technical innovation and public policy reform. Each sponsoring organization lent its unique perspective and hands-on perspective in conveying the promise, progress and challenges ahead for solar cooking.

Event: Unveiling Sweden's SymbioCity™ and understanding 100 percent renewable energy's key role in sustainable development
Organized by: Swedish Trade Council with Embassy of Sweden, Washington, D.C.; Ministry of Corporation, Enterprise, Energy & Communications; and Ministry of Foreign Affairs

Description: Maud Olofsson, Deputy Prime Minister of Sweden and Minister for Enterprise and Energy, unveiled Sweden's "SymbioCity". SymbioCity means urban resource efficiency – across and between different urban technology systems or fields of action. Combine energy, waste management, water supply and sanitation, traffic and transport, landscape planning, architecture and urban functions for new and better solutions as well as a more efficient use of natural resource. Let nothing go to waste!

Event: Pennsylvania: State of Innovation
Organized by: Commonwealth of Pennsylvania with PA Department of Environmental Protection; PA Department of Community and Economic Development

Description: PA's top environmental official, Kathleen McGinty, and PA energy business leaders discussed commercialization and financing challenges and opportunities with emerging technologies such as advanced thin film solar, energy storage and smart grid.

Event: Zambia Integrated Biofuels and Biomass Processing, and Marketing Refund Programme

Organized by: ELIF Business Solutions -COMESA; SNV; Zambia Biofuels Associations; Mungwi Jatropha farmers association

Description: The event described Zambia Integrated Biofuels and Biomass processing and marketing revolving fund programme which is an initiative of the COMESA SMEToolkit Project with the Biofuels Association of Zambia to establish a sustainable resolving fund to promote production of jatropha, processing of Biodiesel/ fuel, collection of agro, forestry and industrial wastes for the production of coal briquettes for both household and Industrial uses, while contributing to sustainable environmental protection and giving an opportunity for farmers and forestry processors to have added incomes for the sale of their respective wastes.

> "While everyone may seek a grid connection with access to unlimited electricity at very low cost, decision makers are realizing that waiting for the grid to reach the more distant communities may take decades and will be costly…"
>
> **-Jamal Saghir, Director for Energy, Transport, and Water, World Bank**

Event: North-South-South Dialogue on Biofuels, Climate and Sustainable Development

Organized by: Stockholm Environment Institute (SEI) with Energy Research Institute (ERI), China; International Centre for Trade and Sustainable Development (ICTSD); National Reference Centre for Biomass (CENBIO), Brazil; The Hub for Rural Development in West and Cen

Description: The event examined how different actors in North and South can respond to environmental and socio-economic concerns about the impacts of rapid expansion in biofuels production and trade, while at the same time promoting the business opportunities and the technology platforms that could be enhanced through greater international cooperation.

Event: Converting CO2 into Things People Need

Organized by: Planet2025 Network with Trees for the Future; Institute for Environmental Security; Millennium Institute; Sarvision

Description: The event consisted of Presentation and subsequent dialogues introducing new initiative by Planet2025 Communities to convert CO2 into things people need. This innovative public-private oriented approach to sustainable development addressed global climate change and poverty alleviation by planting trees on degraded land which create sustainable livelihoods, carbon offsets, biofuels, ecosystems services, and more.

Event: Oceans of Energy: Ocean Thermal Energy - True Baseload Renewable Energy plus Desalinated Water
Organized by: Ocean Energy Council

Description: The event featured audio visual presentation of the potential of ocean energy and a panel discussion.

Event: African Rift Valley Geothermal Initiative
Organized by: Geothermal Energy Association with State Department; Energy Department Geothermal Development Associates; Washington State University; International Geothermal Association

Description: This side event highlighted the implementation and supporting financial vehicles that are currently being deployed to ensure this Global Environment Facility Project is acted on in the best interest of the African governments and private sector interests necessary to deliver this project.

Event: Sustainable Development of Advanced Biofuels for the 21st Century
Organized by: BIO

Description: The event described the most recent advances in applying industrial biotechnology and agricultural biotechnology to cellulosic ethanol and advanced biofuels production. Topics covered a range of topics from feedstock production, pre-treatment, biotech enzymes for conversion and advanced biofuels such as bio-butanol and hydrocarbons from mircrobes.

Event: Higher Education—Meeting the Needs of Space Exploration, The Oceans, The Earth, Atmosphere and The Land
Organized by: NASA, Office of Education

Description: The side event consisted of a panel discussion to highlight the critical importance of increasing the number of top quality scientists and engineers from U.S. institutions, of higher education and to advance the curricula to keep pace with the many opportunities and challenges in outer space, the oceans, the atmosphere and the lands.

Event: New Alliances for a New Energy Future
Organized by: Energy Future Coalition (EFC) with 25x 25; American Council On Renewable Energy (ACORE); Chinese Renewable Energy Industry Association (CREIA); European Renewable Energy Council (EREC); World Council for Renewable Energy (WCRE)

Description: This event focused on non-governmental efforts that create alliances to promote new energy visions, centered on renewable energy, for the future. The event showcased different strategies for alliance building, overcoming barriers in the renewable energy sector, and how best to promote renewable energy under different policy regimes about the participating organizations:

Event: Sustainability Criteria for Biomass
Organized by: German Ministry for Environment

Description: The objective of the side event was to discuss the rationale behind the establishment of sustainability criteria for biomass and its pro and cons. Furthermore the German Biomass Sustainability Ordinance and activities in the EU, other countries and international organizations were presented.

Event: Biomass and Sustainable Energy in the Dominican Republic and Haiti
Organized by: Dominican Institute for Sustainable Development/Latin America and Caribbean Council On Renewable Energy (LACCORE/IDDI) with Planet 2025 Network; Trees for the Future; Spirit of Hispaniola; The Jatropha Foundation; DR Green Airport Project;

Description: This side event presented integrated and sustainable energy projects of relevance for island nations, developing countries, and rural development. Topics for discussion included: sustainable agriculture models for Jatropha growth, development of a flight-training school fueled by locally-produced ethanol, high biomass tree plantings for bioenergy use, sustainable agro-forestry methods, and the necessity for organizations to foster collaboration and networking.

Event: Renewable Energy's Role in Global Security
Organized by: Institute for the Analysis of Global Security (IAGS); Set America Free Coalition; ACORE; World Alliance for Decentralized Energy

Description: The event highlighted the role renewable energy can play in enhancing global security. Speakers will discuss the following topics: How renewable energy can contribute to global security; how can it change the current geopolitics of energy; how renewables can alleviate global poverty and contribute to sustainable growth of developing nations; efforts within the DOD to deploy renewable energy technologies.

Event: Renewable Energy - Electricity and Biofuels - In Latin America and the Caribbean
Organized by: Organization of American States with U.S. State Department

Description: The event highlighted the advances stemming from the 37th OAS General Assembly in Panama - including the resolution, Energy for Sustainable Development, and the on-going collaboration through the U.S.-Brazil partnership on biofuels.

Event: District Energy - Creating Scale for Cleaner Solutions
Organized by: International District Energy Association (IDEA) with U.S. Department of Commerce

Description: The International District Energy Association offered compelling cases of innovative investments in clean energy applications that deliver highly reliable, low-carbon, energy-efficient solutions for urban and campus clusters worldwide.

Event: Good Energies presents David Sandalow's Freedom From Oil and 3TIER's REmapping the World

Organized by: Good Energies, Inc

Description: This event was a business lunch with a book signing by David Sandalow who discussed major points from his book Freedom From Oil. In addition, Ken Westrick of 3TIER presented their new initiative, REmapping the World. Richard Kauffman made remarks on behalf of Good Energies, Inc.

Event: From the Lab to the Market: Accelerating Renewable Energy Innovation and Deployment in the U.S. and Globally

Organized by: Midwest Research Institute and the National Renewable Energy Laboratory (NREL)

Description: This workshop provided an in-depth overview of the current R&D focus for renewable energy within the U.S. National Laboratory system and major trends for collaborating with industry and international partners to move these technologies into the market place.

Event: Renewable Fuels for Aviation

Organized by: Baylor Institute for Air Science (BIAS); UNICA; Federal Aviation Administration (FAA)

Description: This event consisted of presentations and panels discussions on the current status of research, development, implementation and potential of renewable alternative fuels for aviation.

Event: Solving the Challenge

Organized by: GE Energy; GE Energy Financial Services; GE Global Research

Description: Leaders from GE Energy, GE Energy Financial Services and GE Global Research focused on the important role renewable energy must play in meeting energy demand and solving the energy crisis.

Event: Building Effective Government-Industry Collaboration

Organized by: Geothermal Energy Association with Geysir Green Energy

Description: The GEA and Geysir Green Energy plan to create a forum for public representatives from the DOE, BLM, as well as from federal and state governments, to engage in valuable and effective dialogue with geothermal project developers in a forum designed to help increase the use of geothermal resources in the United States.

Event: Innovative Approaches for the Integration of Renewable Energies
Organized by: German Federal Environment Ministry (BMU) with International Energy Agency (IEA)

Description: The recommendations of the project "Grid Integration" being carried out by the IEA as part of the Gleneagles Plan of Action and the BMU's input on these innovative technologies to the IEA work were presented.

Event: Accelerating Clean Energy Technology Innovation
Organized by: The World Bank Group

Description: This workshop focused on the initiatives being carried out by the World Bank Group in developing countries for balancing climate change mitigation and increased energy needs.

Event: Clean Electric Cars Backing Up Renewable Energy
Organized by: University of Delaware with PJM Interconnect

Description: The event featured the Mid-Atlantic Grid Interactive Car (MAGIC) consortium which is a group of public and private organizations that are pursuing development and demonstration of technology for electric cars with high-power grid connections and "vehicle to grid" technology (V2G).

"Critical to securing a sustainable, affordable, and climate-friendly future for this generation and many to come is the ability of individuals and institutions to affect change in the way we generate and use energy."

- Mohamed T. El-Ashry, Chairman, REN21

Event: GBEP-Global BioEnergy Partnership-Bioenergy and Sustainable Development: Opportunities and Challenges
Organized by: Global Bioenergy Partnership (GBEP); Italian Trade Commission

Description: This event consisted of a panel discussion with questions and answers on bioenergy; " how to promote sustainable biomass and bioenergy development; " facilitate investments in bioenergy; " promote project development and implementation; " foster R&D and commercial bioenergy activities via international cooperation; " support national and regional bioenergy policy-making and market development; " favor efficient and sustainable uses of biomass; " foster the exchange of information; " facilitate bioenergy integration into energy markets, by involving government, non-governmental, inter-governmental, private sector, civil society partners.

Event: Asia-Pacific Partnership: Accelerating the Growth of Renewable Energy Technologies

Organized by: APP Renewable Energy Task Force with Department of Commerce; Department of State; Department of Energy

Description: Public and private officials from partner countries Australia, Canada, China, India, Korea, Japan, and the U.S. will gave an overview of the Asia-Pacific Partnership on Clean Development and Climate (APP) and related how the APP adds value to their governments' clean development objectives and their businesses' goals and bottom lines.

Event: Defining Sustainable Hydropower

Organized by: International Hydropower Association with National Hydropower Association; Canadian Hydropower Association; WWF International; The Nature Conservancy

Description: Responding to the need for measurement of sustainability performance in the renewable energy sector, the International Hydropower Association (IHA) has developed a sustainability assessment tool to measure and guide activities in the hydropower sector. As a next step, the Hydropower Sustainability Assessment Forum is carrying out an expert appraisal of the IHA Sustainability Assessment Protocol, with a view towards a future sustainability standard for the sector. Each speaker represented on the panel, explained, from their perspective, why they are interested in the participating in the Hydropower Sustainability Assessment Forum.

> "...to turn ethanol more competitive, it is important that each country manages its tariffs, taxes and policies to address its use instead of gasoline."
>
> **- Manoel Vincente Bertone, Under Secretary for Production and Agro Energy, Ministry of Agriculture, Brazil**

Event: Advanced Biofuels

Organized by: Advanced Biofuels Coalition with Virent Energy Systems, Inc.

Description: Advanced biofuels being developed to provide energy dense, high-quality fuels from a variety of feedstocks, including cellulosic biomass were discussed. These fuels have fuel properties allowing their use in a wider variety of applications, including air travel and many can be used immediately in the marketplace with no new infrastructure investment.

Event: Energy [R]evolution - A sustainable World Energy Outlook

Organized by: Greenpeace International with European Renewable Energy Council (EREC); Global Wind Energy Council (GWEC)

Description: The energy [r]evolution is an independently produced report that provides a practical blueprint for how to half global CO2 emissions, while allowing for an increase in energy consumption by 2050. By dividing the world into 10 regions, with a global summary, it explains how existing energy technologies can be applied in more efficient ways. It demonstrates how a business as usual scenario, based on IEAs World Energy Outlook projections, is not an option for environmental, economic and security of supply reasons.

Event: Pilot Certification System of Biomass

Organized by: German Ministry of Agriculture and Consumer Protection with FNR; meó Consulting Team

Description: Presentation and discussion of the German "International Pilot Certification System of Biomass and Biofuels Production" with its sustainability-certificate and its climate-gas-certificate constituted the contents of this side event.

Event: Renewable Energy Education & Workforce Development: A Global Outlook

Organized by: American Council On Renewable Energy (ACORE) with Association for Advancement of Sustainability in Higher Education (AASHE); Apollo Alliance; CDS International; InWEnt, GmBh; University of California - Berkeley

Description: A Global Outlook has been designed by a collaborative of international organizations to provide a brief, global overview of the current and future workforce needs of the renewable energy industry, and a look at how education providers at the college and university level, and workforce-focused organizations are responding to those demands.

Event: Concentrator Photovoltaics (CPV): Advanced Technology Promise Becomes Energy Solution

Organized by: CPV Consortium with U.S. National Renewable Energy Laboratory (NREL); SolFocus, Inc; Sharp Spectolabs (a subsidiary of Boeing) Energy Innovations

Description: The aim of the CPV Consortium at the side event was to educate policy makers and government planners about CPV, and to facilitate a discussion between governmental/ministerial decision makers and a panel of experts and practitioners about CPV for sustainable energy generation.

Event: Bioenergy & Communications-The Future of Bioenergy: Leveraging New Media

Organized by: National Wildlife Federation; BIOenergy BlogRing; ACORE/Biomass Coordinating Council; Price BIOstock Services

Description: A panel of four experts led the discussion on how can information about bioenergy, including basic facts about new technologies, as well as debates and controversies, be effectively conveyed to investors, media, policymakers, technologists, educators and the public?

Event: Connecting Hydrogen and Renewables

Organized by: National Hydrogen Association with the NHA Renewable Hydrogen Working Group (RHWG)

Description: This side event provided an opportunity to find out more about hydrogen and fuel cell technologies, the status of commercialization, and the importance of a partnership between the hydrogen and renewables industries.

Event: Sustainable Energy Markets: The African experience

Organized by: German Development Cooperation with German Federal Ministry for Economic Cooperation and Development; Directorate-General for International Cooperation (DGIS) of the Dutch Ministry of Foreign Affairs; European Union Directorate General for Development

Description: The side event focused on the African experience and good practice examples in designing sustainable energy markets. High-level representatives of German, Dutch and African governments, of the European Union, as well as representatives of the private sector and utilities discussed what measures can make renewables a success.

Participants filled numerous official side events, such as this one on Defining Sustainable Hydropower, hosted by the International Hydropower Association, National Hydropower Association, Canadian Hydropower Association, WWF International and The Nature Conservancy.

THE WASHINGTON INTERNATIONAL ACTION PROGRAM

Accelerating Renewable Energy Deployment

A major outcome and tangible result of WIREC is the Washington International Action Program (WIAP).

Responding to the call issued by the WIREC organizers, conference participants voluntarily submitted some 140 pledges committing to contribute to the scaling up of renewable energy in the coming months and years. The pledges constitute a rich collection of concrete and often innovative measures taken by the wide variety of partners from governments, civil society, and the private sector. The WIAP provides governments and other major stakeholders in all parts of the world with an inspiring roadmap of global renewable energy progress, and an invaluable source of information on specific steps they can consider to advance the uptake of renewable energy.

A PARADIGM SHIFT: RENEWABLES ENTER THE ENERGY MAINSTREAM

Featuring many ambitious high-impact pledges, the WIAP reflects the dynamic progress observed in the renewable energy sector in recent years, which one could describe as a paradigm shift from the "start-up" to the "scaling-up" phase. Government participants, in particular, were invited to focus on long-term policy commitments, targets, and lasting programs, rather than on stand-alone projects. This led to a variety of bold pledges with long-term impact on political and economic framework conditions. Renewables have entered mainstream energy markets and governments at all levels and other major stakeholders are increasingly favouring solutions offered by the growing family of market-deployable renewable energy technologies.

MILESTONE: THE BONN "RENEWABLES 2004" CONFERENCE

A major milestone fostering this paradigm shift was the "Renewables 2004" Conference that took place in Bonn, Germany. The Bonn Conference brought together, as equal partners, senior government delegates from 154 countries, as well as civil society and business groups. The successful dialogue begun at this conference was continued at the Beijing International Renewable Energy Conference (BIREC) in 2005, and was further advanced by WIREC in Washington, D.C., in 2008.

The Bonn International Action Program (IAP) was a major outcome of "renewables 2004". IAP provided a model for the WIAP, which concentrated on pledges that reflected the "scaling up" phase that renewables have achieved.

WIAP FOLLOW-UP THROUGH REN21

The Renewable Energy Policy Network for the 21st Century (REN21), another product of the Bonn Conference, provides a policy forum for international leadership seeking to accelerate deployment of renewable energies worldwide.

REN21 proved to be an ideal international partner for the WIREC organizers. As REN21 continues to follow up and document the pledges in an ongoing dialog with the program partners, successful results will be highlighted, and active cooperation will be encouraged. We trust that others in the renewable energy community and readers in general, will find WIAP to be a useful living catalogue of best practices and policies tackling real life energy security, environmental and economic development challenges. REN21 will report on progress made on the pledges at the next International Renewable Energy Conference which is scheduled to take place in India in early 2010.

The National Renewable Energy Lab (NREL), located in Golden, Colorado, is conducting an impact analysis of the WIAP pledges and will, in relatively short order, provide the initial results to the WIREC Conference organizers for public dissemination.

The WIREC organizers sincerely thank all who contributed to, and will continue to contribute to, the successful implementation of the Washington International Action Program.

On the following pages, you will find an overview of the WIAP pledges. All pledges are presented in detail on the REN21 website at www.ren21.net/wiap. REN21 will post follow-up information on the pledges on their website as it becomes available.

> "…further increase of the use of renewable energy is important both from the perspective of security of supply and from the perspective of sustainable development."
>
> **-Kaspars Gerhards,**
> **Minister of Economics, Latvia**

Pledge Desk located at WIREC

WASHINGTON INTERNATIONAL ACTION PROGRAM (WIAP)

Individual pledge details can be found at www.ren21.net/wiap

Pledges by National Governments

Lead Entity(ies)	Title of Pledge
Afghanistan / Ministry of Energy and Water	National policy and public awareness campaign on renewable energy use in Afghanistan and reduction of air pollution in Kabul
Argentina / Government of Argentina	Increasing renewable energy to 8% of electricity consumption by 2016, 5% of fuels by 2011, and promoting rural access to renewable energy.
Australia / Government of Australia	20% target for renewables in Australia's electricity supply by 2020
Azerbaijan / Ministry of Ecology and Natural Resources	Promote and increase utilisation of wind and solar energy in the country
Bahamas / Ministray of Public Works and Transport	Developing an energy policy for the Commonwealth of the Bahamas.
Brazil / Government of Brazil	Increase renewable energy and implement Ten-year Plan for Energy Expansion to match expected 47% increase in installed electric capacity
Cameroon / Ministry of Energy and Water Resources	Increasing energy supply and energy services for sustainable development via accelerated use of renewable energy
Canada / Government of Canada	Inclusion of renewable energy tax incentives in the 2008 budget
Canada / Government of Canada	Latest version of the Government of Canada's (NRCan) RETScreen Clean Energy Project Analysis Software - officially launched
Canada / Government of Canada	Provide CAD 4 bn in funding to the ecoENERGY Initiatives in support of renewable energy and energy efficiency in Canada
Cape Verde / Ministry of Economy, Growth and Competitiveness	Greening Cape Verde: 50% renewables in nationwide power production by 2020, 100% on one island
Denmark / Ministry of Climate and Energy	Increase use of renewable energy and energy efficiency
Egypt / Ministry of Electricity and Energy	Satisfying 20% of the Egyptian generated electricity by renewable energies, mainly wind & hydro, by 2020
European Union / Council of the European Union	Increase share of renewable energy to 20% and reduce greenhouse gas emissions by 20% in the EU by 2020
France / Government of France	Beyond 20% of RE in the final energy consumption by 2020

Germany / Government of Germany	EUR 550m to renewable energy and energy efficiency in developing countries in 2008
Germany / Government of Germany	Boosting energy research and demonstration in innovative fields of renewable energy
Germany / Government of Germany	Doubling the special facility for renewable energy and energy efficiency
Germany / Government of Germany	Feed biogas into the natural gas network
Germany / Government of Germany	Implementation of the strategy of the German Government on the use of offshore wind energy
Germany / Government of Germany	Renewable Energies Heat Act to help increase share of renewable energies in heat provision to 14% by 2020
Germany / Government of Germany	Renewable Energy Sources Act (EEG) to help raise share of renewable electricity to 25–30% by 2020
Germany; Spain; Slovenia / Governments	Boosting international cooperation on feed-in systems
Haiti / Government of Haiti	Creating the proper environment for renewable energy in Haiti
Indonesia / Ministry of Energy and Mineral Resources	New national energy policy to optimize the national primary energy mix by increasing share of renewable energy to 15% in 2025
Ireland / Department of Communications, Energy and Natural Resouces	EUR 20m research fund to increase energy research capacity in Ireland
Ireland / Department of Communications, Energy and Natural Resources	Domestic grant program of EUR 58m for biomass, solar and geothermal technologies
Ireland / Department of Communications, Energy and Natural Resources	EUR 26m for ocean energy research and development
Italy / Ministry of Economic Development	Increase the share of renewable energies in the energy mix
Jamaica / Ministry of Energy, Mining & Telecommunication Petroleum Corporation	Reduce dependence on imported fossil fuels through the development of indigenous renewable energy resources to 10% of the electricity generation by 2010 and 15% by 2020

Japan / Ministry of Economy, Trade and Industry	Expanding introduction of renewable energy to 3% of total primary energy supply by 2010
Japan / Ministry of Economy, Trade and Industry	Usage target of 16 bn kWh by 2014 based on the Renewable Portfolio Standard law
Jordan / Ministry of Energy and Mineral Resources	Promoting the utilisation of renewable energy sources to share 10% in the primary energy by the year 2020
Kenya / Ministry of Energy	Accelerate renewable energy growth through Formulating and Instituting a policy on renewable energy development in the next two years
Latvia / Ministry of the Environment	Program for the development of production and use of biogas
Lithuania / Ministry of Economy	Increase share of renewable energy to at least 20% by 2025
Madagascar / Ministry of Energy and Mines	National policies to achieve 54% renewable energy share by 2020
Mauritania / Ministry of Hydraulics, Energy and ICT	Using wind power for sea water desalination
Morocco / Ministry of Energy, Mines, Water and Environment	Increase the contribution of renewable energy to 10% of national energy balance and 20% in electricity supply by 2012
Netherlands / Government of the Netherlands	Increasing share of renewable energy to 20% in 2020, increasing share of sustainable biofuels, energy efficiency, emission reduction
New Zealand / Ministry of Economic Development	Reach 90% renewable electricity target by 2025
Nicaragua / Ministry of Energy and Mines	Expanding renewable electricity generation to 38% by 2011, improving regulatory framework for renewable energy investments, and promoting biofuels
Norway / Ministry of Foreign Affairs	Promote and support renewable energy in developing countries
Norway / Ministry of Petroleum and Energy	Reach combined target for renewable energy and energy efficiency: 30 TWh increased annual production from 2001 to 2016
Norway / Ministry of Petroleum and Energy	Step up energy research and development policy

Pakistan / Planning and Development	Achieve 10% share of renewable energy in the national energy mix by 2012
Paraguay / Ministry of Industry and Commerce	National Biofuels Development Plan to expand biofuels from 5% to 50% by 2013
Poland / Ministry of Economy	Develop and implement national program for agricultural biogas plants and introduce white certificate mechanism for energy efficiency
Rwanda / Government of Rwanda	90 % of renewable energy in electricity production by 2012
Spain / Ministry of Industry, Tourism and Trade	Action Plan to increase use of renewables to at least 12% by 2010 and increase energy efficiency
St. Kitts and Nevis / Government of St. Kitts and Nevis	Develop various renewable energy technologies and energy efficiency
Sweden / Ministry of Enterprise, Energy and Communications	Implement energy policy to reach 49% of renewable energy by 2020 and long-term sustainability
Switzerland / Department of the Environment, Transport, Energy and Communications	Introduction of Action Plan for renewable heat sources to raise share of renewable energy in TPES from 16.2% to 24% by 2020
Switzerland / Department of the Environment, Transport, Energy and Communications	Legally based financial mechanism for accelerated market penetration of renewable electricity to boost generation by 5,4 TWh by 2030
Switzerland / Department of Finance	Promotion of biofuels
Switzerland / Government of Switzerland	Double the interdepartmental platform budget to CHF 4m in 2008-2010 to promote renewable energy and efficiency in international cooperation
Tanzania / Ministry of Energy and Minerals	Strengthen the legal, regulatory and institutional framework to support the development of a sustainable biofuels industry
Tunisia / National Agency for Energy Conservation	Promotion of renewable energy to reach 10% in national energy demand by 2011 and reduction of total demand
Turkey / Ministry of Energy and Natural Sources	Renewable energy and energy efficiency targets and regulation
Uganda / Ministry of Energy and Mineral Development	Making modern renewable energy a substantial part of Uganda's national energy consumption, up from 4% to 61%
UK / Department for Business, Enterprise and Regulatory Reform	Expedite offshore wind farm development to contribute to the UK's target of 10% of electricity generation from renewables by 2010

UK / Department for Business, Enterprise and Regulatory Reform	Funding a European marine energy test centre
UK / Department for Business, Enterprise and Regulatory Reform	Reform of financial support to renewable electricity generators
UK / Department for Environment, Food and Rural Affairs	Provide financial support for commercial scale anaerobic digestion demonstration plants
UK / Department for Environment, Food and Rural Affairs	UK commitment to fund REEEP, the Renewable Energy and Energy Efficiency Partnership, for 3 years, with GBP 2.5m available for 2008/9
USA / Agency for International Development	Improved access to clean energy services in developing countries with USD 125m in 2008
USA / Department of Agriculture	Federal biobased preferred product procurement
USA / Department of Agriculture	Renewable energy systems and energy efficiency improvements program with loan guarantees and grants
USA / Department of Agriculture	Woody biomass grants to turn forest residue into marketable products
USA / Department of Commerce	Access of renewable energy technologies in China and India
USA / Department of Defense	Renewable energy production and procurement to reach 25% of the Department's facility electrical consumption by 2025
USA / Department of Energy	Biomass products market cost targets through 2012
USA / Department of Energy	Renewable energy use requirements for federal facilities and vehicle fleets through 2015
USA / Department of Energy	Solar America Initiative
USA / Department of Energy	USD 10bn Loan guarantee program for renewable and energy efficiency
USA / Department of Energy	Wind Electricity Market Cost Targets for land-based and offshore systems

USA / Department of State	APP grants add renewable power in India
USA / Department of State	Greening United States embassies
USA / Department of the Interior	Complete national geothermal resource assessment by end of 2008
USA / Department of the Interior	Complete Regulatory framework for alternative energy development on the Outer Continental Shelf
USA / Department of the Interior	Efficiency improvements in 58 hydroelectric power plants
USA / Department of the Interior	Land use planning to increase renewable energy development on public lands
USA / Department of Transportation	Alternative fuel vehicle testing and research on required biofuels infrastructure
USA / Department of Transportation	Federal Transit Administration Clean Fuels and Advanced Propulsion Technologies Program with focus on field testing in public transit systems
USA / Department of Treasury	Launch USD 2bn Clean Technology Fund
USA / Environmental Protection Agency	Green Power Partnership includes 850 private partners buying 17 bn KWh of green power in 2008
USA / Environmental Protection Agency	Partnership for Clean Indoor Air to reduce exposure of 750,000 people in developing countries by 2009
USA / Environmental Protection Agency	Recovery of landfill methane to reduce greenhouse gas emissions and generate renewable energy from 560 landfills by 2012
USA / Environmental Protection Agency	Renewable fuel standard of 36 bn gallons by 2022, with sub- requirement of 21 bn gallons of advanced biofuels by 2022
USA / Environmental Protection Agency	SmartWay Grow & Go partnership with freight industry to increase use of renewable fuels
USA / Export-Import Bank	Supporting increased renewable energy exports with lending enhancements

USA / National Aeronautics and Space Administration	Solar resource assessment using earth observations with emphasis on products for the developing world
USA / Overseas Private Investment Corporation	Global renewable energy facility to be created in 2008
USA / Trade and Development Agency	Biomass power generation feasibility study in Namibia
USA / Trade and Development Agency	Jatropha biodiesel development feasibility study for possible large-scale production
USA / U.S. Trade and Development Agency	Project preparation assistance, investment analysis, project definition, sector development, and trade capacity building to accelerate renewable energy use in developing countries

Pledges by International Organisations, Local/Municipal Governments, Stakeholders from the Civil Society, the Private Sector and other Stakeholder Groups

Lead Entity(ies)	Title of Pledge
ADEME, EDF, Fondation Energies pour le Monde, GERES FRANCE	Providing energy services through renewable energy technologies to 1.5 m people in off-grid rural and peri-urban areas
American Jewish Committee, USA	A U.S. Human Rights NGO Going Green
Bangkok Metropolitan Administration, Thailand	Bangkok's program on initiatives to alleviate the effects of climate change
Baylor Institute for Air SciencesSpirit of Hispaniola, USA	Green airport and International Flight Academy on biofuels
Biomass Coordinating Council, USA	Promoting collaboration and information sharing on biomass through WIKI platform
Cemtec, Aalborg University / Northern Jutland, Denmark	Creation of Hydrogen Valley - Cluster for hydrogen and fuel cell business
City of Bellingham, WA, USA	City of Bellingham commits to 100% green power
College of the Atlantic, USA	College of the Atlantic 100% renewable by 2015
EarthAction International, USA	Bring 'Feed In' legislation to state and federal governments in the US,- convince 10 States within two years

Energy Efficiency Centre, Georgia	Nation wide campaign for the promotion of renewable energy and energy efficiency
Equity International, Inc., USA	Achieving 100% RPS by all 50 U.S. states
European Renewable Energy Council	Council to facilitate EU's commitment to obtain 20% of energy needs from renewable energy by 2020
Firestar Engineering, LLC, USA	Research into non-carbon-based fuels and low temperature energy conversion processes
Forrester Partners Limited, UK	Incentive program to encourage employees of Forrester Partners Limited to switch to renewable energy
France / Electricité De France	Rural electrification in South Africa with photovoltaic kits
Fundación Solar, Guatemala	Create a positive energy footprint in everyday practices of indigenous populations through education, social organization and environmental sensibility
GE Energy Financial Services	Increase renewables investment to USD 6bn by 2010
Global Network on Energy for Sustainable Development	Assessment of priority options for biofuels strategy for poverty alleviation and achieving the important MDGs in selected regions and sub-regions
Global Urban Development and Rockefeller Brothers Fund, USA	Climate Prosperity Project to increase public awareness about the opportunities of engaging in climate protection
Grameen Shakti, Bangladesh	Policy advocacy for formulating and declaring a national renewable energy policy for Bangladesh
GreenMotion	Identify at least 1,000 new ideas, technologies, processes, and techniques which will help meet the global energy needs in a renewable and sustainable way
Greenpeace International	Energy [R]evolution 2008 – communicating A Sustainable World Energy Outlook
India / City Managers' Association Orissa	Local Government Climate Change Adaptation Programme

Indira Gandhi Institute of Development Research, India	Capacity building for creating access to clean, affordable and reliable energy services for the rural households and urban poor households through renewable energy technologies
Institute for Research in Sustainable Energy and Development, Kenya	Development of sorghum for food and bioenergy
International Green Energy Council, USA	Educating leaders and students worldwide about the benefits of energy efficiency and renewable energy
International Institute for Sustainable Development	Creation of ENERGY-L distribution list for international sustainable energy activities
Juniata College, USA	Offsetting 75 % of electricity consumption through wind energy credits
My Organic Market, LLC, USA	Offset 100% of energy usage by purchasing wind energy
NatureWorks, LLC, USA	Purchasing green power to offset electricity used in manufacturing process
Partnership International, Inc, USA	Promote financing, development, implementation, and dissemination of best-practice model to help expand solar and wind power in African countries
Philippines / Miriam Colleage	Campaign to increase public education and awareness of renewable energy and the environment
Planet2025 Network	Integration of sustainable biofuel crops as renewable energy component into community based agroforestry efforts
Prokaushali Sangsad Limited, Bangladesh	Scaling up RE technology application and adaptation to the impact of climate change
Remineralize the Earth, Inc. (NGO), USA	The potential of remineralization with rock mineral fines to transform biofuel production and sequester carbon
Romanian Energy Policy Association	Workshop for dissemination of WIREC 2008
Shri Jagdamba Samiti, India	Promotion of pico hydro power unit in Garhwal Himalayas for agro-processing - revival programme of traditional water mills

Solar Generation International	Campaign geared towards public awareness and real solutions on climate change through renewable energy and energy efficiency
Tanzania Traditional Energy Development and Environment Organization	Providing energy access to at least 1 million people through use of renewable energy in order to reduce poverty
The Netherlands / SNV Netherlands Development Organisation	Domestic biogas: Capturing the markets in Asia and Africa
Tokyo Metropolitan Government, Japan	Expansion of the Use of Solar Energy
Town of Warrenton, Virginia, USA	Reduce the carbon footprint of Warrenton by 25% by 2012 primarily through a waste to energy plant
University of Hawaii-Hilo, College of Agriculture, Forestry and Natural Resource Management, USA	Research project for the growing of palm oil in Hawaii on abandoned sugar cane lands
USA / Climate Institute	Assist a dozen small island states in developing and implementing sustainable energy plans
USA, State Governments	State Renewable Portfolio Standards (RPS)
Volvo Group	Increasing the use of renewable energy in production and products, and increasing energy efficiency
Waitukubuli Ecological Foundation, Dominica	Develop community wind energy projects in Dominica to cover at least 25% of the island's energy needs
World Bank Group	World Bank Group Strategic Framework for Climate Change and Development
World Experience for Georgia (Foundation), Georgia	Promotion of renewable energy in Georgia through policy development, increased awareness and regional cooperation

INDIA IN 2010

In 2010, India will host the next event in the series of conferences which has so far included Bonn, Beijing, and Washington. By the time the international community gathers in India, technologies will be more advanced than they were at WIREC. Technologies are developing very quickly, and significant breakthroughs are likely by 2010. We envision that the increasing interest in renewable energies worldwide will mean that governments will place more emphasis on these alternative energy sources, and that the renewables business will have many new players and much more investment. The world is progressing quickly in its use of renewable energy, which will have profound impacts in the long-term.

The India meeting will be crucially important in keeping the thousands of public officials around the world informed on the status of renewable energy technologies, costs, economics, markets, industry, projects, financing, and public policy; and on the outlook ahead. We also look forward to REN21's report on progress on the WIAP which we expect by 2010 will yield significant, concrete steps toward the rapid global uptake of renewable energy technologies.

Ambassador Reno Harnish, Principal Deputy Assistant Secretary of State, U.S. Department of State and General Chairman of WIREC introduced the rapporteurs who summarized each thematic area.

V. Subramanian, Secretary, Ministry of New and Renewable Energy, India, said India has offered to host the next International Renewable Energy Conference, with the dates and venue to be decided, but most likely in early 2010.

Allan Johnson, Senior Advisor to the Under Secretary for Rural Development, U.S. Department of Agriculture and Deputy General Chairman of WIREC, welcomed participants and thanked organizers for their efforts.

ACKNOWLEDGMENT

In an endeavor the size and complexity of WIREC, there are literally hundreds of people who made significant contributions to make WIREC the success we all hoped for. They deserve and I offer my sincere thank you. Starting with the United States Government, I want to acknowledge the extraordinary contributions made by Under Secretary Paula Dobriansky and Under Secretary Tom Dorr, who provided the senior political leadership to launch and sustain WIREC through to its conclusion. In addition to inspired leadership, we needed significant financial support which was provided by the Departments of State, Agriculture, Interior and the Environmental Protection Agency (EPA) and the U.S. Agency for International Development (USAID). The Interagency Organizing Committee, comprised of representatives from 9 Departments and agencies (see the Annex for its membership), was the key organizing body that provided overall direction and coordination to the WIREC effort. Within this body, I would like to thank my co-chair Allan Johnson and the focal points who were responsible for delivering key parts of the Conference including Dr. Harry Baumes (Agenda and the Agriculture, Forestry and Rural Development theme), Dr. James Fisher and Dr. Puru Jena (Research and Development theme), Greg Manuel, Andy Karsner, Rob Sandoli, Dr. Janaki Alavalapati, and Brian O'Hanlon (Market Adoption and Finance theme), Tracy Hall, Griff Thompson, and Lori Brutten (Sub-nationals theme), Isabel Gates (Budget and Conference Logistics), Stan Specht (WIREC Action Group Director and International Pledges), Mike Mills (U.S. National Pledge), Teresa Hobgood (Congressional relations), Eric Stockey (Security), Judy Siegel and Maria Rivera-Ramirez (Official Side Events), Camille Hill (Invitation Lists and Official Delegations), and Jim Brownlee, Kathy Eagen, Matthew Cassetta, Heather Vaughn, and Carolyn O'Conner (Communications and Public Diplomacy). We could not have written the thematic reports of this Conference report without the drafting skills and guidance of the focal point thematic leaders noted above and the numerous rappateurs who skillfully captured the highlights of the 29 plenary and concurrent sessions. I want to especially thank Dr. Puru Jena and Stan Specht for the countless hours they dedicated to organize and edit this Conference report. I also want to commend the U.S. Embassy staff for their incredible efforts to firm up official delegations, encourage pledges and effectively communicate the goals and objectives of WIREC to our diverse international audiences.

The United States worked closely with a host of domestic and international partners in order to make WIREC a truly global platform for an array of major renewable energy stakeholders. We were fortunate to count on the enlightened and tireless advice and assistance of our domestic partner Mike Eckhart, President of the American Council On Renewable Energy (ACORE) and his talented team including Amanda Howe, Jim Pierobon, Dawn Butcher, Tom Weirich, Jodie Rousell, and Julia Fischer-Mackey. ACORE secured the support of a group of leading corporations including BP, Brookfield Power, GE, Good Energies, Renewable Capital, Volvo, Chevron, Covanta Energy, GM, Stoel Rives, and Unica (see annex for the complete list) who sponsored important aspects of the Conference. We

were also fortunate to count on the services of the United States Energy Association (USEA), a seasoned and flexible contractor, led by its Executive Director Barry Worthington and Rob Donovan. We were equally fortunate on the international side with the constant support and advice from REN21 led by its Chair Mohamed El-Ashry and his talented team including Paul Suding, Virginia Sonntag-O'Brien, Philippe Lempp and Miriam Knoerzer. Marianne Moscoso-Osterkorn, John French, Glynn Morris, Amanda Luxande, Amy Kean, and Mark Lambrides of REEEP, organized highly productive regional consultations prior to WIREC, whose results were reported at WIREC. Florian Bauer and Camilla Chambers of REEGLE provided an upgraded IT tool that highlighted WIREC themes and best practices. I want to thank Dr. Lynn Wagner, of the International Institute for Sustainable Development (IISD), and her dedicated team for their timely and comprehensive coverage of the WIREC Ministerial proceedings, and for granting us permission to use extensive portions of text from their WIREC 2008 Ministerial Bulletin in the Introduction and Plenary sections of this report.

I also thank the governments of Germany, Sweden, Italy, Canada, and the Organization of American States, for their generous financial support that allowed deserving international delegates to attend WIREC.

The WIREC Ministerial proceedings were energized by more than 125 speakers who generously contributed their time, talent, passion and intellectual capital to inspire and challenge WIREC's participants to develop and implement creative policies and initiatives to accelerate the deployment of renewable energy on a global basis. Finally, I want to thank you, the nearly 9,000 WIREC participants, for making WIREC a milestone and inspiring event in the global renewable energy journey and more importantly, for your day to day contributions to ensure that renewable energy has a rapidly growing and sustainable role in our energy mix, in our economic development and in our daily lives.

Reno L. Harnish
Principal Deputy Assistant Secretary
Bureau of Oceans, Environment, and Science
U.S. Department of State
Washington, D.C.

Washington International Renewable Energy Conference

Agenda

Tuesday, March 4, 2008

7:00 – 7:00 p.m. **Registration**

8:30 – 9:00 a.m. **Welcome and Introductions**

Paula Dobriansky, Under Secretary of State for Democracy and Global Affairs,
Department of State of the United States
Michael Eckhart, President, American Council On Renewable Energy (ACORE)
Thomas Dorr, Chairman, Secretary's Energy Council, Under Secretary for Rural Development,
United States Department of Agriculture

9:00 – 10:30 a.m. **Opening Statements**

Introductions: **Paula Dobriansky**, Under Secretary of State for Democracy and Global Affairs,
United States Department of State

Speaker: **John D. Negroponte**, Deputy Secretary of State, United States Department of State
The Challenge and Charge to the Attendees

Speaker: **Ed Schafer,** Secretary, United States Department of Agriculture

Speaker: **Michael Müller,** Parliamentary State Secretary, Germany
Lessons from Bonn, 2004.

Speaker: **Zhang Xiaoqiang,** Vice Chairman. National Development and Reform Commission of China
Lessons from Beijing, 2005.

10:30 – 11:00 a.m. **Networking Coffee Break**

11:00 – 12:30 p.m.

Ministerial Level Plenary Session: Defining the Issues
Introductions: **Hermann Scheer,** Germany, General Chairman World Council for Renewable Energy

Current Trends and Issues: Renewable Energy
Speaker: **Samuel W. Bodman**, Secretary, United States Department of Energy
Speaker: **Tony Hayward,** CEO, BP
Changing Role: Transition to Renewables
Speaker: **Mohamed El-Ashry,** Chairman, REN21
Speaker: **Nobuo Tanaka,** Executive Director, International Energy Agency
Speaker: **Vinod Khosla,** Founder and CEO, Khosla Ventures and Sun Microsystems.

12:30 – 2:15 p.m.

Lunch for all Ministerial registered participants
Ministerial Luncheon by invitation only
Host: **Chuck Conner,** Deputy Secretary, United States Department of Agriculture

Speaker: **Dirk Kempthorne,** Secretary, United States Department of Interior

2:30 – 4:00 p.m.

Concurrent Session I
Ministerial Session: The Economic and Environmental Benefits of Renewable Energy
(Open to all Official Party and U.S. Government)
Co-Chair: **Steve Johnson**, Administrator, United States Environmental Protection Agency
Co-Chair: **Andris Piebalgs,** Energy Commissioner, European Union

In this closed interactive session, the Ministers addressed the key benefits of rapid deployment of renewable energy technology including:
- Energy Security
- Climate Change
- Environment and Air Quality
- Economic Growth including Rural Development

A representative group of Ministers each gave 5 minutes of remarks and then the floor was open for discussion.

2:30 – 4:00 p.m.

Concurrent Session II

Stakeholder Session: The Economic and Environmental Benefits of Renewable Energy

(Open to all registered participants)

Chair: **David Hales,** President, College of the Atlantic

In this closed interactive session, the stakeholders addressed the key benefits of rapid deployment of renewable energy technology including:

- Energy Security
- Climate Change
- Environment and Air Quality
- Economic Growth including Rural Development

A representative individual gave 5 minutes of remarks followed by open discussion..

Speaker: **Dieter Salomon,** Lord Mayor, Freiburg, Germany
Speaker: **Corrado Clini,** Chair, Global Bioenergy Partnership (GBEP)
Speaker: **Dan Reicher,** Co-Chair of ACORE, and Director of Climate Change and Energy Initiatives,
Google, Inc.
Speaker: **Lew Milford,** President, Clean Energy Group (US)
Speaker: **Moekti H. Soejachmoen** , Indonesia
Speaker: **Arthouros Zervos,** President European Wind Energy Association, President European
Renewable Energy Council
Speaker: **Tetsunari Iida**, Executive Director, Institute for Sustainable Energy Policies, Japan

4:00 - 4:30 p.m.

Networking Coffee Break

4:30 - 6:00 p.m.

Joint Ministerial-Stakeholder "Straight Talk" Session

(open to all registered participants)

Moderator: **Hank Habicht,** Vice Chairman of the Global Environment and Technology Foundation and Managing Partner of SAIL Venture Partners

The session was kicked off by brief remarks by **Andris Piebalgs,** representing ministers and
David Hales, President, College of the Atlantic representing stakeholders, who shared the results of the prior sessions. After their brief remarks the session was open for discussion.

Open Discussion

6:00 – 7:30

Opening Night Reception on Trade Show Floor

Wednesday, March 5, 2008

7:00 a.m. – 7:00 p.m. **Registration**

7:00 – 8:00 a.m. **Breakfast**

8:00 – 9:00 a.m. **Plenary A Market Adoption and Finance**

Co-Moderator: **Gregory Manuel,** Special Advisor to the Secretary of State and International Energy Coordinator, United States Department of State
Co-Moderator: **Alexander "Andy" Karsner**, Assistant Secretary Energy Efficiency and Renewable Energy, United States Department of Energy

Speaker: **Maud Olofsson,** Deputy Prime Minister and Minister for Enterprise and Energy, Sweden
Speaker: **Reuben Jeffery III**, Under Secretary for Economic, Energy and Agricultural Affairs,
United States Department of State
Speaker: **Tim Pawlenty,** Governor of Minnesota and Chair of the National Governors Association
Speaker: **Michael Liebreich,** CEO, New Energy Finance
Renewable Energy

8:00 – 9:30 a.m. **Plenary B Agriculture, Forestry and Rural Development**

Moderator: **Thomas Dorr,** Chairman, Secretary's Energy Council, Under Secretary for Rural Development, United States Department of Agriculture

Speaker: **Chuck Conner,** Deputy Secretary of Agriculture, United States Department of Agriculture
Speaker: **Marcos Jank,** President and CEO, Brazilian Sugar Cane Industry Association (UNICA)
Speaker: **Andrzej Dycha,** Under Secretary of State, Ministry of Agriculture and Rural Development,
Republic of Poland
Speaker: **Richard Tolman**, CEO, National Corn Growers Association
Speaker: **Arthur Cua Yap**, Secretary, Department of Agriculture, Republic of the Philippines

10:00 a.m. **Special Address:**
George W. Bush, President of the United States of America

11:00 – 1:00 p.m. **Concurrent Ministerial Level Sessions: Market Adoption and Finance (3); Agriculture, Forestry and Rural Development (4); and State and local authorities**

11:00 – 1:00 p.m. **Market Adoption and Finance Concurrent Sessions**

A1. Grid-Connected Generation: Market Adoption and Deployment of New Technology

Moderator: **Hans Jorgen Koch,** Deputy State Secretary, Ministry for Climate and Energy, Denmark

Panelists:
Christine Wörlen, Deutsche Energie-Agentur GmbH (dena) - German Energy Agency
Terry Hudgens, President and CEO, PPM Energy
Ian Simm, Chief Executive Officer, Impax Group PLC.
Lucien Bronicki, Founder, Chairman, and Chief Technology Officer, Ormat Technologies, Inc

A2. Distributed and Off-Grid Generation: Market Adoption and Deployment of New Technology

Moderator: **Jeff Leonard,** President and CEO, Global Environment Fund

Panelists:
Wu Guihui, Deputy Director General, Energy Bureau, National Development and Reform Commission, People's Republic of China
Linda Conlin, Vice Chair and First Vice President, Export Import Bank of the United States
Gary Rieschel, Founder and Managing Director, Qiming Venture Partners
Daniel Yergin, Chairman, Cambridge Energy Research Associates, Inc. (CERA)

A3. Renewable Fuels: Market Adoption and Deployment of New Technology

Moderator: **Paolo Frankl**, Head of Renewable Energy Unit, International Energy Agency

Panelists:
Guatam Bhandari, Executive Director, Morgan Stanley
Kadri Nassiep, CEO, South African National Energy Research Institute
Fernando Reinach, General Partner, Votorantim Ventures
Steve Gatto, Chairman, Chief Executive Officer, Bioenergy International
John Plaza, President/Founder, Imperium Renewables

11:00 – 1:00 p.m.

Agriculture, Forestry and Rural Development Concurrent Ministerial Level Sessions

B1. Sustainability, Technology, and Development

Moderator: **Claudia McMurray,** Assistant Secretary of State for Oceans, Environment and Science, United States Department of State

Panelists:

Juan Pablo Bonilla, Sustainable Energy and Climate Change Initiative Coordinator, Inter-American Development Bank

Prodipto Ghosh, Senior Advisor to Prime Minister of India and Distinguished Fellow, The Energy and Resources Institute

William D. Dar, Director General of the International Crops Research Institute for the Semi-Arid Tropics

Manoel Vincente Bertone, Under Secretary for Production and Agro Energy, Ministry of Agriculture, Brazil

B2. Rural and Economic Development

Moderator: **James R. Kunder,** Deputy Administrator, United States Agency for International Development

Panelists:

Jamal Saghir, Director for Energy, Transport, and Water, World Bank

Sarah Adams, CEO, GVEP International (Global Village Energy Partnership)

Doug Faulkner, Deputy Under Secretary for Rural Development, United States Department of Agriculture

Yasuo Watanabe, Deputy Director General, Minister's Secretariat, Ministry of Agriculture, Forestry and Fisheries (MAFF), Japan

Albert Butare, Minister of State in charge of Energy and Communications, Ministry of Infrastructure, Rwanda

B3. Development of Biobased Products Industry (NON-Fuels)

Moderator: **Roger K. Conway**, Director, Office of Energy Policy and New Uses, United States Department of Agriculture

Panelists:

John Renieri, Vice President and General Manager, Bio-Based Materials - Energy & Specialties, DuPont

Ibrahim Togola, Director, Mali Folkecenter / CURES Network, Citizens United for Renewable Energy and Sustainability, Mali.

Boyd Rutherford, Chair, USDA Sustainable Operations Council, Assistant Secretary for Administration, United States Department of Agriculture

B4. The Role of Forestry in Renewable Energy
Moderator: **Mark Rey,** Vice Chairman, Secretary's Energy Council and Under Secretary for Natural Resources and Environment, United States Department of Agriculture

Panelists:
Donna Harman, President and CEO, American Forest & Paper Association
Mauri Pekkarinen, Minister of the Economy, Finland
Sundar Bajgain, Head Biogas Programs, Bangladesh
Tom Richardson, Chief Executive Officer, Scion Group
Robert M. Persaud, M.P., Minister, Ministry of Agriculture, Guyana

11:00 – 1:00 p.m. **State and Local Authorities Concurrent Ministerial Level Session**
C1. Renewable Energy Policy & Financing Initiatives: Lessons Learned and Emerging Strategies
Co-Moderators: **Virginia Sonntag-O'Brien**, Coordinator, UNEP Sustainable Energy Finance Initiative - SEFI and **Piyush Ranjan Rout**, Executive Director of City Managers' Association Orissa, India

Panelists:
Mark Sinclair, Director, Clean Energy States Alliance (U.S.)
Dieter Salomon, Lord Mayor, Freiburg, Germany
Javier Garcia Monge, Energy and CDM Investment, Investment and Development Division", Corfo, Chile
Patrick J. D'Addario, President, Fiorello H. LaGuardia Foundation
George Fitch, Mayor, Warrenton, Virginia, USA

1:00 - 2:30 p.m. **Lunch for all Ministerial registered participants**
Ministerial Luncheon by invitation only
Host: **Ed Schafer,** Secretary, United States Department of Agriculture

Speaker: **Robert Mosbacher**, Jr., President and CEO, U.S. Overseas Private Investment Corporation (OPIC)

1:00 - 2:00 p.m. **Renewable Energy Luncheon Event for Parliamentarians**
By Invitation Only

2:30 – 4:00 p.m.

Plenary Session Research and Development

Moderator: **Peter Robertson,** Vice Chairman, Chevron Corporation

Speaker: **Walter Kohn**, Department of Physics, University of California, Santa Barbara, Santa Barbara, Nobel Laureate (Chemistry, 1998)
Speaker: **Ossur Skarphedinsson**, Minister of Industry, Iceland
Speaker: **John Holdren**, Teresa and John Heinz Professor of Environmental Policy, Harvard University and member of the National Academy of Sciences and Engineering
Speaker: **Li Junfeng**, Secretary General, Chinese Renewable Energy Industries Association
Speaker: **Arthouros Zervos,** President European Wind Energy Association, President European Renewable Energy Council

2:30 – 4:00 p.m.

Market Adoption and Finance Concurrent Ministerial Level Sessions:

These sessions focus on enabling renewable energy uptake in mature markets.

A4. Grid-Connected Generation in Mature Markets

Moderator: **Binyamin Ben-Eliezer**, Minister of National Infrastructure, Israel

Panelists:
Christopher Eckerberg, Vice President and Head of Public Affairs, Vattenfall
Robert Hertzberg, Chairman and Founder, G24 Solutions
Pat Wood III, Principal, Wood3 Resources and Past Chairman of Advisory Board, Airtricity North America

A5. Distributed and off-grid generation in Mature Markets

Moderator: **Wolfgang Palz,** Chair, World Council for Renewable Energy

Panelists
Thomas Dinwoodie , CEO, SunPower Corporation, Systems
Mit Mehta, Principal, CCMP Capital Advisors, LLC
Daniel Foley, VP, Power Marketing, Acciona Energy North America

A6. Renewable Fuels in Mature Markets

Moderator: **Harry Duynhoven**, Associate Minister of Energy and Minister of Transport Safety,
New Zealand

Panelists
Paul Vikner, President and CEO, Mack Trucks
Mark Fulton, Managing Director, Global Head of Strategic Planning and Climate Change Strategist, Deutche Bank
Don Paul, Vice President - Special Projects, Chevron Corporation
Mary Beth Stanek, Director of Environment, Energy, and Safety Policy, General Motors Corporation

2:30 – 4:00 p.m. **State and Local Authorities Concurrent Ministerial Level Session**

C2. Economic Development & Renewable Energy

The purpose of this session is to explore various economic development tools state and local governments can employ to support key technology companies, the further commercialization of cutting-edge, employment generating renewable technologies, and the development of successful local and international markets for them.

Co-Moderators: **Katie McGinty,** Secretary, State of Pennsylvania: Energy Independence Strategy

Panelists:
Paul Tonko, President, NYSERDA, State of New York, Innovative Business Development
Marta Bonifert, Executive Director, Regional Environmental Center for Central and Eastern Europe
Tom Delay, Chief Executive, UK Carbon Trust
Stephen Kabuye, Mayor of Entebbe, Uganda
Kaspars Gerhards, Minister of Economics, Latvia

4:00 – 4:30 p.m. **Networking Coffee Break**

4:30 – 6:00 p.m. **Concurrent Sessions: Market Adoption and Finance (3); Research and Development (4); and State and local authorities**

4:30 – 6:00 p.m. **Market Adoption and Finance Concurrent Ministerial Level Sessions:**

These sessions focus on enabling renewable energy uptake in emerging markets.

A7. Grid-Connected Generation in Emerging Markets
Moderator: **David Bohigian,** Assistant Secretary for Market Access and Compliance, U.S. Department of Commerce

Panelists:
V. Subramanian, Secretary to Government of India, Ministry of New and Renewable Energy
V.K. Garg, Chairman and Managing Director, Power Finance Corp
Dana Younger, Senior Advisor for Renewable Energy and Sustainability, Infrastructure Department, International Finance Corporation (IFC)
Jeffrey Sachs, Director of The Earth Institute, Quetelet Professor of Sustainable Development, and Professor of Health Policy and Management, Columbia University

A8. Distributed and off-grid generation in Emerging Markets
Moderator: **Mark Radka**, Energy Programme Coordinator, United Nations Environment Programme (UNEP)

Panelists:
Mohamed Berdi, Director of International Cooperation, Ministry of Energy, Mines, Water, and Environment. Morocco
Amaldo Vieira de Carvalho, Sustainable Energy Specialist, Inter-American Development Bank (IDB)
Christopher Flavin, President, Worldwatch Institute
Anthony Orlando, President and CEO, Covanta Energy
Angelo Reyes, Secretary, Department of Energy, Republic of the Philippines

A9. Renewable Fuels in Emerging Markets
Moderator: **Hernan Martinez Torres**, Minister, Ministry of Energy and Mines, Colombia

Panelists:
Yusof Basiron, CEO, Malaysian Palm Oil Council
José Sergio Gabrielli de Azevedo, President and CEO, Petrobras
Anil Cabraal, Lead Energy Specialist, World Bank
Glenn Prickett, Senior Vice President, Conservation International

4:30 – 6:00 p.m.

State and Local Authorities Concurrent Ministerial Level Session

C3. Renewable Energy Collaboration Opportunities: Creating national and Sub-national Partnerships:
Moderator: **Paul Suding**, Head of Secretariat, REN21

Panelists:
Marianne Osterkorn, International Director, Renewable Energy and Energy Efficiency Partnership
Kijune Kim, Chair of the Asia Pacific Partnership for Clean Development and Climate, Renewable Energy Distributed Generation Task Force, South Korea
Brian McLean, Director, Office of Atmospheric Programs, United States Environmental Protection Agency
Marty Sedler, Global Utilities Director, Intel Corporation
Gunnhild Utkvitne, Director, Baltic Sea Solutions

4:30 – 6:00 p.m.

Concurrent Ministerial Level Sessions for Research and Development

D1. Bioenergy Feedstocks
Moderator: **Gale Buchanan**, Under Secretary for Research, Education, and Economics, United States Department of Agriculture

Panelists**:**
Miles Drake, Senior Vice President, Research & Development, Weyerhaeuser Company
Kepler Euclides Filho, Executive Director of EMBRAPA, Brazil
Timothy Searchinger, Woodrow Wilson School, Princeton University
Wayne Smith, Former Dean of College of Agricultural and Life Sciences and Director of School of Forest Resources and Conservation at the University of Florida

D2. Bioenergy Conversion Processes
Moderator: **Ray Orbach**, Under Secretary for Science, Office of Science, United States Department of Energy: Introduction to the topic

Panelists:
Jan-Eric Sundgren, Senior Vice President Environment and Public Affairs, Volvo Group
James A. Dumesic, Professor of Engineering, University of Wisconsin
Bruce E. Dale, Editor In Chief, Biofuels, Bioproducts & Biorefining; Associate Director: Office of Biobased Technologies; and Professor: Department of Chemical Engineering and Materials Science, Michigan State University
David B. Sandalow, Senior Fellow Foreign Policy, The Brookings Institute

D3. Wind and Solar
Moderator: **Joachim Luther**, Chairman of the International Science Panel on Renewable Energies (ISPRE)

Panelists:
Dan Arvizu, Director, National Renewable Energy Laboratory
Nathan Lewis, George L. Argyros Professor of Chemistry, Cal Tech
Arnold Goldman, Founder & Chairman of BrightSource Energy, Inc.

D4. Ocean, Tidal, Geothermal, Hydro and Hydrogen
Moderator: **Jason Bak**, Chief Executive Officer, Finavera Renewables Inc.

Panelists:
Liv Monica Stubholt, Deputy Minister, Ministry of Petroleum and Energy, Norway
Kristjan Guy Burgess, Executive Director, Global Center, Iceland
Jose Achache, Director, Group on Earth Observations Secretariat, Geneva, Switzerland
Thorsteinn Sigfusson, Professor of Physics, University of Iceland, Iceland.

6:00 – 7:30 p.m. **Reception for all registered participants**

Thursday, March 6, 2008

7:30 a.m. – 2:00 p.m. **Registration**

7:30 – 9:00 a.m. **Breakfast**

8:30 – 10:00 a.m. **Opening Plenary: Presentation of findings from focal theme discussions**

Co - Moderator: **Reno Harnish**, Principal Deputy Assistant, Secretary of State,
United States Department of State
Co – Moderator: **Allan Johnson**, Senior Advisor to the Under Secretary for Rural Development,
United States Department of Agriculture

Agriculture, Forestry and Rural Development -
Thomas Dorr, Chairman, Secretary's Energy Council,
Under Secretary for Rural Development, United States Department of Agriculture
Market Adoption and Finance -
Gregory Manuel, Special Advisor to the Secretary of State and International Energy Coordinator, United States Department of State
Research and Development -
Millie Dresselhaus, Institute Professor, Massachusetts Institute of Technology (M.I.T.), United States
Regional Findings -
Buyelwa Sonjica, Minister, Ministry of Minerals and Energy,
South Africa

10:00 – 10:30 a.m. **Press Conference**

10:00 - 10:30 a.m. Networking Coffee Break
10:30 – 12:00 p.m. Pledges and Commitments
Alexander "Andy" Karsner, Assistant Secretary, Office of Energy Efficiency and Renewable Energy, United States Department of Energy

12:00 – 12:30 p.m. **Closing Remarks and Announcements**

Paula Dobriansky, Under Secretary of State for Democracy and Global Affairs, United States Department of State
Michael Eckhart, President, American Council On Renewable Energy (ACORE)
V. Subramanian, Secretary, Ministry of New and Renewable Energy, Government of India

12:30 – 2:00 p.m. **Lunch for all Ministerial registered participants**

Host: **Paula Dobriansky,** Under Secretary of State for Democracy and Global Affairs,
United States Department of State

Speaker: **Graeme Wheeler,** Managing Director, Operations,
The World Bank Group
Speaker: **Maud Olofsson,** Deputy Prime Minister and Minister for Enterprise and Energy, Sweden

Participants in the ministerial meeting gathered for lunch afterward, and heard addresses by Maud Olofsson, Deputy Prime Minister and Minister for Enterprise and Energy, Sweden (shown here) and Graeme Wheeler, Managing Director, Operations, The World Bank Group.

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Turkey
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Ukraine
United Arab Emirates
United Kingdom
United States of America
Uruguay
Yemen
Zambia

Also participated: European Commission, Palestinian National Authority, and Taiwan.

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Photo taken at the last meeting of the Interagency Working Group (for a complete list of the working group members, see page 110)

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